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ABSTRACT

This issue contains the following articles: "The Pragmatics of Wh-Question Intonation in English" (Christine Bartels); "The Nature of Object Agreement in Hungarian" (Huba Bartos); "Voah Mei Daett Sei Deitsh: Developments in the Vowel System of Pennsylvania German" (David Bowie); "Event Time Properties" (Gerhard Brugger); "Polarity in Spanish, French, and English" (Dee Cain, Renee J. O'Brien); "Chanting Intonation in French" (Zsuzsanna Fagyal); "Sui Generis Genericity" (Hana Filip, Greg Carlson); "South Slavic Clitic Placement Is Still Syntactic" (Steven Franks); "Permission Sentences in Dynamic Semantics" (Javier Gutierrez-Rexach); "Do I Sound 'Asian' to You? Linguistic Markers of Asian American Identity" (David B. Hanna); "Subcategorization Semantics and the Naturalness of Verb-Frame Pairings" (Edward Kako); "Extraction, Gradedness, and Optimality" (Frank Keller); "A Non-Scalar Account of Apparent Gradience: Evidence from Yo and Ne" (Yuriko Suzuki Kose); "No Escape from Syntax: Don't Try Morphological Analysis in the Privacy of Your Own Lexicon" (Alec Marantz); "What Does the Copula Do?" (Kunio Nishiyama); "Disyllabic Requirement in Swahili Morphology" (Jae-Ick Park); "Aspectual Shifting in the Perfect and Progressive" (Laura Wagner); "A Model-Theoretic Approach to A-Not-A Questions" (Jianxin Wu); and "Against Overt Particle Incorporation" (Jochen Zeller). Diagrams, tables, and references appear throughout the articles. (KFT)

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Working Papers in Linguistics

Volume 4.2 (1997)

Proceedings of the 21st Annual Penn Linguistics Colloquium

Edited by:

Alexis Dimitriadis, Laura Siegel,
Clarissa Surek-Clark and Alexander Williams

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The Editors

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The Pragmatics of *Wh*-Question Intonation in English

Christine Bartels

1. Tonal Patterns in Questions

Any description and compositional phonological analysis of intonation contours must make certain assumptions as to what constitutes linguistically relevant contrasts in this domain—that is, a semantics. As Pierrehumbert & Hirschberg (1990) observe, "any theory of transcription must be viewed as provisional unless it is supported by considerations both of sound structure and of interpretation."[1]

However, the task of mapping sound into meaning is made difficult by the fact that a given intonation contour—a sequence of tones, or *tune*—can have very different connotations in different contexts. It is often suggested, therefore, that the contribution of tune, i.e., choice of tones, to utterance meaning in English is dependent on the discourse situation at utterance time and cannot be analytically reduced to constant semantico-pragmatic correlates of the relevant pitch movements; in short, that English pitch contours are polysemous.

By contrast, this paper argues, with Gussenhoven (1984) and Pierrehumbert & Hirschberg (1990), that tunes *can* be decomposed into tonal morphemes with invariant, abstract meanings/functions; all specific connotations are claimed to be pragmatic inferences derived from these abstract meanings in conjunction with contextual factors.

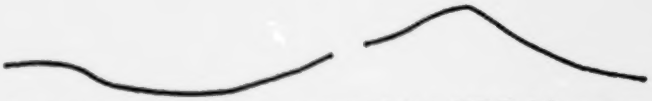
However, aside from different assumptions about the nature of the phonological and morphological building blocks involved, the model presented here differs from these earlier proposals for compositional models of tonal meaning in that the meanings of the tonal morphemes are drawn from a different domain. Both Gussenhoven and Pierrehumbert & Hirschberg find the denotata of the tonal morphemes they identify—kinetic tones for Gussenhoven, level tones for Pierrehumbert & Hirschberg—in epistemic and discourse relations. They see the role of pitch accents as instructing the addressee on the joint epistemic status of the accented item, proposing, in Pierrehumbert & Hirschberg's words, that "speakers use tune to specify a particular relationship between the 'propositional content' realized in the intonational phrase over which the tune is employed and the mutual beliefs of participants in the current discourse." Thus Gussenhoven sees choice of nuclear accent tone (that is, the pitch movement associated with the sentence's main stress) as dependent on the 'manipulation' of the participants' shared cognitive 'background' that a speaker intends to effect: a fall means that the accented material is to be added to the background, a fall-rise that the material is being selected from the background, and a rise that its status is being tested. In Pierrehumbert and Hirschberg's level tone model, a high accent tone [H*] marks an item as 'new' to the common context, a low one [L*] as given. Phrasal tones instruct the hearer on interphrasal discourse dependencies: high tones [H-,H%] indicate a connection to the subsequent prosodic phrase, whereas low tones [L-, L%] indicate lack of dependency.

---

[1] The content of this paper has been greatly influenced by discussions with Arthur Merin, whose Decision-Theoretic Semantics underlies the theory of tonal meaning presented here (see also Merin & Bartels 1997).

These semantics permit a plausible interpretation of tonal patterns in many contexts. However, in some cases they mispredict. For instance, while Pierrehumbert & Hirschberg would correctly ascribe 'given-ness' to *Freudian (account)* and 'new-ness' to *cognitive (account)* in (1),

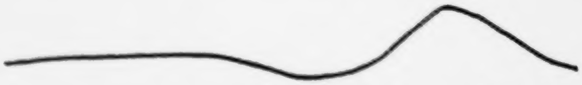
(1)



It's not a FREUdian account - it's a COGnitive one.
L* L-H% H* L-L%

corresponding to the contrast between L* and H*, their account also predicts that in the alternative question (AQ) in (2) *French* is 'given' or 'not-new' and *Flemish* is 'new' to the discourse context.

(2)

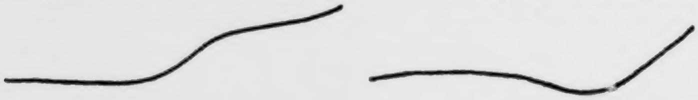


Did the suspect speak FRENCH or FLEmish?
L* H* L-L%

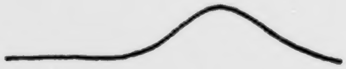
But this is not borne out by intuitions: the two disjuncts have the same status. Note also that permuting 'French' and 'Flemish' in (2) changes nothing intuitable regarding 'given/newness' but would force a switch in accent tones.

In other cases the discourse-epistemic semantics fail to make requisite predictions. Here the constraints on, and observed variations of, phrasal intonation in questions are a prime example, though not the only one. (Other unexplained phenomena are the tonal contrasts in adverbials such as *always* and *usually* noted by Allerton & Cruttenden (1978), or the association of obligatory genericity with rising intonation on indefinite sentence topics, to name only two.) The term 'question intonation' standardly refers to contours characterized by a final rise. Yet AQs such as (2) must obligatorily show a fall on the last disjunct. Yes-no questions (YNQs) such as those in (3a,b) may either rise or fall. (By corpus statistics, two thirds fall. Among rising questions, one can distinguish between high-rises and low-rises, as shown in (3a).)[2]

(3) I didn't know John took a job all the way over in Tualatin.



a. Does he have a CAR now? / Does he have a CAR now?
H* H-H% L* H-H%



b. Does he have a CAR now?
H* L-L%

The same goes for *wh*-questions (WHQs) such as (4a,b), although these tend more strongly toward a falling pattern.

(4) A: I still have that mysterious backache. It simply won't go away. I even went to see an orthopedic specialist yesterday.

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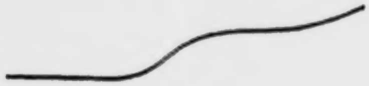
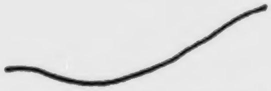
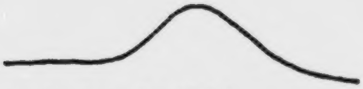
[2] For simplicity, I'm going to ignore the possibility of fall-rises and other variants here and below.

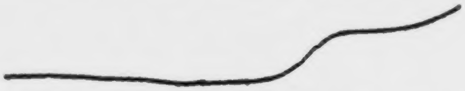
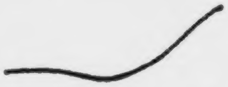
a. E: And what did HE have to say?/ ... did HE have to say?
H* H-H% L* H-H%



b. E: And what did HE have to say?
H* L-L%

Only in their use as 'echo questions' (5a,b) do YNQs and WHQs consistently end with a rise:

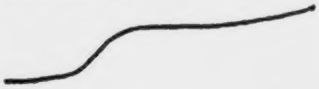
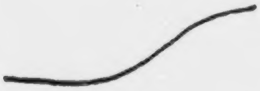
(5)a. A: Did Amy get the summer job at the embassy?

E: Did she get the job at the EMbassy? / ... at the EMbassy?
H* H-H% L* H-H%
(...Was that your question?)

b. A: Amy started her job at the embassy last week.

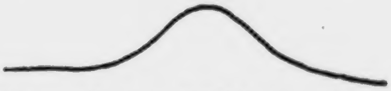
E: She started

her job WHERE last week? / ... WHERE last week?
H* H-H% L* H-H%

Oddly, though, so-called 'reference questions' (Rando 1980) such as (6), which are superficially similar to echo questions in being ostensibly discourse linked, must always show a final fall.

(6) A: I just talked to him last night.



E: You talked to WHO last night?
H* L-L%

These tonal patterns have not yet received a satisfactory explanation.

2. A Decision-Theoretic Semantics for Intonation

2.1. Constructing a Domain of Denotata

The present account, based on a semantico-pragmatic model developed by Arthur Merin of the University of Stuttgart (Merin 1994, 1996; with precursors in Merin 1983, 1985), can make sense of the above observations in a straightforward way. It proposes fundamental sociopolitical relations governing the establishment, maintenance and negotiation of cooperation among potentially autonomous actors as the natural target domain for a semantics of intonation; within this model, negotiations regarding the discourse-epistemic status of propositions put forward by the participants might be seen as a special case.

Aside from covering a greater range of data, this approach also has the virtue of greater phylogenetic plausibility. Ohala (1983) suggests that high or rising tone is associated across species with ostensible submissiveness, i.e., low relative social power, and of low or falling tone with impositiveness, i.e., high relative social power—features usefully conveyed in a competitive Darwinian world. It is not obvious how these vocal gestures should have led to intonation as a gestural system involving discourse-epistemic denotata. By contrast, it is an uncontroversial assumption that humanity had to negotiate as it came into existence, and individual people have to start negotiating all too soon after coming into the world.

I can only give a brief sketch of Merin's formal decision-theoretic model here. Cooperating actors in a minimal, i.e., bi-person social situation—call them [E]go and [A]lter—have to establish a 'common ground' (CG) of joint deontic-boulomaic or epistemic commitments. (The default identification in the examples here is for Ego with the present speaker, and for Alter with the addressee.) To the extent of being autonomous, Ego and Alter are in need of persuasion. The paradigmatic question is always:

> "Why (<expletive>) should I (do/believe that)?"

The need for persuasion implies that Ego's and Alter's preferences are formally inverse regarding points at issue. Indifference or consonance means, by definition, that there is no issue. Negotiations are in essence bargaining games (Nash 1953), i.e., social situations in which interests are neither wholly opposed nor wholly consonant, promoting strategies of 'competitive cooperation'.

Negotiations on what becomes CG proceed by Elementary Social Acts (ESAs) consisting of Claims, Concessions, Denials, or Retractions (of a Claim). ESAs are transitions to (and from) negotiation states characterized by vectors of binary decision-theoretic parameters (Merin 1994). These parameters allocate ostensible agent-role [S]; preference [P] w.r.t. propositions under negotiation; dominance [D] w.r.t. balance of incentives/warrant; and initiator role [I] among Ego and Alter. For example, Ego's Claim for a proposition Θ to become a mutually binding constraint—Ego's least marked act type—is formally characterized as <E,Θ,E,E,E>: speaker role, preference, dominance, and initiative (in that order) are all assigned to Ego. By contrast, Ego's Concession of Θ is explicated as <E,Θ,A,A,A>: preference, dominance, and inititative are all Alter's. Similarly, for Ego's Denial of Θ the settings are <E,Θ,A,E,A>; i.e., preference for Θ and initiative are Alter's, but Ego is dominant. Whereas for Ego's Retraction of Θ the settings are <E,Θ,E,A,E>; preference for Θ and initiative are Ego's, but Alter is dominant. Other combinations of parameter settings for a given speaker and proposition are ruled out by a constraint setting 'P = I' underlying this act typology: it is assumed that *homini oeconomici* do not undertake counterpreferential initiatives. However, other act typologies, leading to explications of, e.g., Entreaty and Offer, can be obtained by relaxing or even inverting the constraint.

Once a claim is (vocally or tacitly) conceded, the propositional object Θ becomes CG, i.e., a mutually binding constraint on future action—in particular, future discourse moves. If a claim is denied by Alter and retracted by Ego, its contradictory—*not*-Θ—becomes CG. This concept of 'common ground' can be seen to subsume familiar notions in traditional, epistemically oriented models of discourse: e.g., Stalnaker's (1978) 'common context set', Gussenhoven's (1984) 'shared background', Clark & Marshall's (1981) 'mutual beliefs', and perhaps most directly, Hamblin's (1971) 'joint public commitment slate', or the combination of background assumptions and the evolving 'conversational record'.

In bargaining situations proper, extensions of the simple D and P parameters are determined in terms of cardinal (dis-)utilities. This, Merin argues, seems plausible for typical imperatives, e.g.:

"Give me your wallet! (Else be a casualty)" but specious for indicatives. Beliefs are, if anything, dispositions to action, not actions. In the present model, therefore, a measure of epistemic state change potential (Merin 1996), namely stochastic evidential *relevance*, instantiates the role of a utility. The expressed proposition is a more or less useful *argument* for or against an ulterior constraint on belief or action, i.e., an ulterior proposition at issue.

2.2. Intonational Morphemes

Intonational morphemes are assumed here to be kinetic tones: Falls, Rises, and some of their compounds, such as the so-called Fall-Rise. (For lack of time, compound tones will not be discussed here.) They thus involve combinations each of at least two of the phonemic tone units postulated in Pierrehumbert's now widely used (1980) model of English intonation: the accent tone associated with a stressed syllable and at least one subsequent phrasal tone. These kinetic morphemes denote, in the first and core instance, (re-) allocations of the [D]-parameter value—i.e., of the power of choice—regarding the instantiation of variables under negotiation. A Rise (L* H-/%) alienates choice to Alter, a Fall (H* L-/%) appropriates it. Variably defeasible default associations introduce preference ('scale') and initiative ('anaphoricity')-related aspects.

Unless there are more highly ranked variables under negotiation, in a typical discourse context tonally cued (re-)allocation of choice is likely to be interpreted with respect to propositional content: either with respect to propositions expressed by a whole sentence or clause or with respect to focus-identified subsentential items (usually syntactic constituents) that co-determine propositions. This is even more so the case for utterances presented in isolation—quasi-decontextualized 'citation forms' as approximated by some of the examples given here.

3. General Application to Questions

The decision-theoretic model offers the following account of the question data presented above for which the discourse-epistemic one fails to predict.

Variability of final pitch movement in YNQs and WHQs reflects the fact that Ego may foreground either of two choice-related aspects inherent to questions:

- in asking, Ego is alienating choice among alternatives (sets of possible worlds) to Alter, i.e., making a Concession;
- in demanding an answer from Alter, Ego is forcing Alter to commit himself to one mutually binding alternative, thus banning others from inclusion in the CG; Ego is thereby making a Claim, an attempt to restrict Alter's future situational options.

Bolinger (1978a) already noted that questions oscillate between the force of requests and that of orders. As Merin (p.c.) puts it, the glass of situational options available to Alter is presented as half-full or half-empty by Ego. The claim, then, is that the dominant illocutionary force determines intonation: ostensibly concessive allocation of choice to Alter and ostensible demand for commitment are conveyed through final rise (e.g., (3a,4a)) vs. final fall (e.g., (3b,4b)) respectively.

In AQs such as (2), rises on nonfinal disjuncts ostensibly concede to Alter the choice of whether the respective proposition is to become a mutually binding constraint, i.e., part of the CG. However, the last disjunct (*Flemish*) represents a proposition which *must* be added to the CG if none of the preceding ones have been. It is a demand (Claim) for the addressee to commit himself. Without this fall, the question as a whole would not convey that one and only one alternative *must* be chosen, and by inference, that the options are mutually exclusive and the list exhaustive; hence the obligatoriness of the final pitch movement.

In YNQs such as (3a,b), rising intonation conveys that the surface proposition is being posed for Alter to endorse or not; though one might say that logically, (at least) two alternatives are being offered, the covert one is not made salient. Falling intonation, by contrast, makes a YNQ akin to an alternative question in saliently evoking two mutually exclusive alternatives—the surface proposition and, most commonly, its negation.[3] In other words, by ostensibly conveying a demand for Alter to restrict his options, i.e., to commit himself to the elimination of possible worlds that until then have still been "live options" from the point of view of the conversational record, the more peremptory falling intonation in itself serves to makes this alternative set salient.

---

[3] Note that falling YNQs are more suitably reported embedded under *whether* than are rising YNQs (Bolinger 1978b; Bartels 1997).

4. *Wh*-Questions

I mentioned that WHQs tend relatively more strongly than YNQs toward showing a final fall. Two factors—not unrelated—can be invoked to explain this tendency. One is the existential presuppositions inherent to WHQs according to most semantic analysts; e.g., in the case of (4a,b), the presupposition 'He had something—one particular thing—to say'. To the extent that this presupposition is not yet perceived by the questioner to be part of CG, he can felicitously (nonvacuously) demand commitment to it from Alter by way of asking the WHQ. The presupposition represents an impositive lower bound on the epistemic commitment accompanying any direct, i.e., cooperative, answer and thus motivates the impositive intonation, even though choice of instantiation for the variable represented by the *wh*-expression is allocated to Alter (Bolinger 1982; Merin 1983).

However, this reasoning is not entirely convincing, in that most of the time, a speaker asking a WHQ does indeed assume that the relevant presupposition is part of the CG; if he did not, asking a YNQ (e.g., in (4), "And, did he have anything to say?") might often be a more appropriate strategy.

What holds more generally is that a WHQ is inherently impositive in that it always forces Alter to pick one and only one alternative from an explicitly or at least contextually restricted set of *equally salient* possibilities. In other words, even the most request-like WHQ demands of Alter that he renounce saliently evoked "live options" from the context. A speaker Ego still has a choice whether to foreground this Claim-like aspect of his question or whether to foreground instead the fact that he is, after all, offering Alter a choice among options: the glass can still be presented as half-empty or half-full. But by tendency, compared with YNQs, which by nature of their surface structure single out one alternative rather than evoking a set, WHQs will lean toward the intonation that signals restriction of Alter's situational options.

4.1. Reference Questions

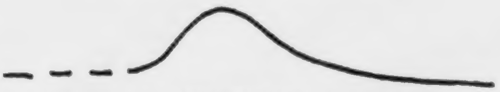
Evidence for this account of tonal meaning in WHQs are 'reference questions' such as (6) above (and (8) below), which are obligatorily falling. These have the express purpose, one might say, of producing previously evaded commitment from Alter to a specific extension of a designating expression, i.e., the *wh*-expression. They are thus inherently, foremost Claims, imposing on Alter the demand to eliminate alternative options that he has intentionally or unintentionally preserved for himself through the vagueness—as perceived by Ego—of his original utterance.

While one could let the argument rest at that, it is worth noting that there is also the possibility of a more specifically linguistic line of reasoning here. Note that in reference questions, unlike other falling WHQs, the *wh*-expression must receive the nuclear accent; it is narrowly focused here. It has been argued by Berman (1990), Ginzberg (1992) and others that narrowly focused *wh*-expressions are always non-quantificational and specific in nature; one piece of evidence being that such *wh*-expressions scope over all other sentence constituents. Wide scope is generally taken as a criterion for specificity in NPs (see, e.g., Fodor and Sag 1982). Thus in (7), wide scope of *an advisor* over *every student* ('There is an x such that every y talked to x') is considered an indication of specificity in the indefinite.

(7) Every student talked to an advisor.

By the same token, the obligatory wide scope of the *wh*-phrase in the reference question in (8) points to this *wh*-phrase having specific reading ('There is an x such that most of you talked to every one of x's students today; who is x?').

(8) A: Most of us talked to every one of his students today.



E: Most of you talked to every one of WHOSE students today?
H* L-L%

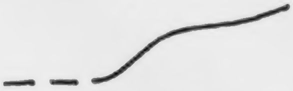
Enç (1991) defines specificity independent of scope possibilities as the property of being D-linked in Pesetsky's sense: a specific expression must stand in some sort of relationship to previously introduced referents, e.g., an inclusion relationship. This notion is compatible with Erteschik-Shir's (1986) view of *wh*-expressions in (non-echo) questions being "restrictively dominant," i.e., roughly, contrastively focused—asking for an entity to be picked from a salient set—when they bear the sole accent. By this criterion as well, the *wh*-expressions in (6) and (8) can be said to be specific.

What one might want to conclude, then, is that a reference question such as (6) or (8) has a surface structure involving a specific placeholder 'X' rather than a variable 'x': 'You talked to person X last night', 'Most of you talked to every one of X's students today', etc.. In other words, a reference question represents a closed, assertable proposition that can be added as such to the CG. While Ego would have to grant, of course, given Alter's previous utterance, that the corresponding existential presupposition, i.e., the open proposition involving a variable 'x', has already been committed to, he now ostensibly conveys a demand for Alter to newly commit himself to the epistemically stronger closed proposition not yet part of the CG (Bartels 1997). In this a reference question is no different from a declarative sentence, analyzed as an epistemic Claim in the present model.

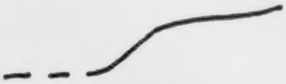
5. Echo Questions

That leaves the case of echo questions, such as (5a,b). Why should they always rise? The pragmatic account laid out above predicts this tonal pattern, as follows: Ego cannot felicitously demand (claim) of Alter commitment to a proposition to which Alter has already made a commitment by his original utterance. Rather, in the case of an echo-YNQ Ego ostensibly offers Alter another choice to accept the posed sentence as an accurate echo of his original utterance or not. Only the posed sentence is made salient; alternative possibilities as to what Alter may have said originally are not. If one wishes to assume an implicit performance report frame at some level of linguistic structure, as given in (5a'), the echo utterance constitutes simply a special case of rising original YNQs.

(5a') A: Did Amy get the summer job at the embassy?
A': Amy got the summer job at the embassy.



E: [Did you ask] 'Did she get the job at the EMbassy?'
H*/L* H-H%



E': [Did you say] 'She got the job at the EMbassy?'
H*/L* H-H%

As to echo WHQs, the questioning Ego knows—and needs to convey that he knows — that Alter has already committed himself to a proposition containing a definite, referential expression in place of the *wh*-word. So even though such questions cannot be paraphrased as *if*-questions with an implicit performance report frame quoting the echo sentence with the *wh*-word in situ (cf. (5b')), the same general reasoning as with echo-YNQs applies. -

(5b') A: Amy started her job at the embassy last week.

E:# Did you say 'she started her job WHERE last week'?

E': Where did you say she started her job last week?

Note that the *wh*-expression in echo questions must be assigned some of the same semantic properties as in reference questions: it is narrowly focused, nonquantificational according to Ginzburg and Berman, D-linked by Enç's definition, and takes widest scope, including scope over the implicit performative report frame, as illustrated by the E' paraphrase in (5b'). But even if one grants the *wh*-expression the relatively strong status of a specific placeholder here, the resulting proposition ('Amy started her job at place X last week') is still not stronger informationally than Alter's original statement. Any demand for commitment to the *wh*-based proposition would be vacuous, and thus, following Stalnaker (1978) and others, an infelicitous discourse move.

6. Extended Functions of *Wh*-Question Intonation in Context

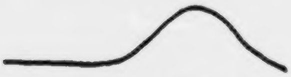
It was stated earlier that in the unmarked discourse context, tonally cued (re-)allocation of choice is likely to be (intended to be) interpreted with respect to propositional content; all of the examples presented so far were analyzed accordingly. However, in original, non-reference questions—questions that could be cast quite appropriately as either offers of choice or instructions for commitment given the current CG—it appears possible for discourse participants to forego this default interpretation in favor of reference to another salient, negotiable variable: the issue who of the participants is to take or maintain local or global control of discourse topic and development—control of the way in which the conversational record is to be shaped.

Unfortunately there is no room here for presentation of extensive discourse fragments, and no statistically significant corpus analysis has yet been carried out. But consider your intuitive perception of the effect of final intonation on the addressee's likelihood to assume initiative in discourse development in the following examples (loosely modeled after fragments cited in Selting 1991). In (9)-(11), the crucial WHQ shows a final fall:

(9) A: I always hate it when a class has only women in it.

E: Yeah, me too.

A: Just in general... But this term it's really extreme.

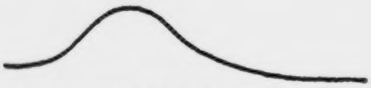


E: *What do you STUdy?*
H* L-L%

A: Ah...sociology and music.

E: Hmm. I'm in speech pathology. Same thing there...
[dialogue continues with short alternating moves]

(10) A: [explaining about her difficulties with an 'incomplete']
and... and then I tried to explain this, repeatedly ... why
I couldn't make that time...



E: *Hmm... so who TAUGHT that course?*
H* L-L%

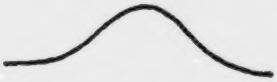
A: George Bell is his name.

E: Oh, I know him. He came to our departmental potluck one time. Seemed a bit of an odd bird.

A: That's what I thought.

(11) A: What are those scars you got there?

E: Oh those... those just look so bad because whoever did the stitches did a lousy job.

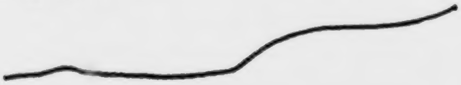


A: *But what HAPpened?*
H* L-L%

E: Ah, I had a kind of accident in woodworking class in school...
[goes on the describe the event]

Now compare these with (12)-(14), in which the crucial WHQ shows a final rise.

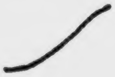
(12) A: [describing why she quit her waitress job]
...and, I was exhausted, ... couldn't have done that much longer you see...



E: *How long do they stay OPen at night?*
H* H-H%

A: Oh, until one o'clock at least... Anyway, with school starting up again and Mom still needing me to help out on weekends...
[goes on in her description]

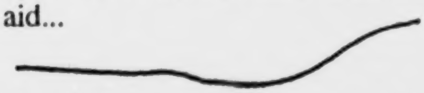
(13) A: I tell you, I was so upset with that woman...



E: *Why?*
L* H-H%

A: Because ... because of her political sheNANigans... like during the student senate election campaign...
[goes on to explain]

(14) A: [talking about thinking of quitting college]
Part of it is the fact that, mhm, I no longer get financial aid...



E: *So what are you LIVing on now?*
L* H-H%

A: Well, savings and stuff, mostly... It's hard to get a part-time job around here... Perhaps I should just take a leave of absence and see if I can straighten things out...
[goes on talking about her plans]

Selting (1991) states that falling intonation is common in WHQs conveying need for additional information on a given discourse topic or confirmation of an inference, whereas rising questions tend to move the discourse forward. I'd like to submit that the basic effect is better characterized interactively: utterance-final intonation in these questions—especially the more marked rising intonation where it occurs—signals on whose terms the cooperative development of the conversational record is to take place in subsequent moves. Falling WHQs as in (9)-(11) can indicate the questioner's intent to assume control over the discourse; they are impositive—*Claim-like* in Merin's sense. A cooperative addressee will oblige by trying to alleviate the need for information conveyed by the question—be it with a brief, single-clause response as in (9) or (10) or a more extensive description as in (11)—but he is no more likely than the questioner himself to then move the discourse forward to the next topic. Whereas rising questions like (12)-(14) are *concessive* in ostensibly leaving control of the discourse with the addressee: they, too, express a desire for a particular bit of information that a cooperative addressee will seek to satisfy, but they do not impose a new topic on the discourse and are often taken by the addressee as permission or invitation to elaborate further on the topic at hand, as illustrated in the examples.

7. Conclusion

We must conclude that in richer situational contexts, in which several variables are simultaneously under negotiation, tonal contours of wh-questions do not always pattern with whether or not the addressee is already committed to a relevant proposition. It is precisely such instances of lack of consistent ties to participant beliefs vis-à-vis propositional (or presuppositional) content that have led some discourse analysts to claim that intonation contours cannot be assigned invariant meanings or functions. However, given the sociopolitical domain of intonational meaning proposed here, the observed range of connotations in context can still plausibly be said to arise as pragmatic inferences from the basic interactive meanings of the respective tonal morphemes.

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The Nature of Object Agreement in Hungarian[1]

Huba Bartos

1. Introduction

Hungarian displays two verbal agreement paradigms, traditionally referred to as 'subjective' and 'objective' inflection. In very general terms, intransitive verbs are invariably affixed with the subjective endings, while in the case of transitive verbs, the choice depends on some property of the object. The fundamental nature of this decisive factor is the main topic of the present paper. I will argue that all the previous accounts of the nature of this 'object agreement' are unable to cover all the cases involved, because they all fail to recognize the precise properties that condition the choice between the paradigms. I will therefore propose a new criterion for the distinction between nominal phrases that trigger objective agreement, and those that do not. At the heart of my suggestion lies the assumption that nominal phrases are not uniform categorially: some project a DP-layer, while others do not, and this entails important differences in their behavior. Specifically, my account capitalizes on the minimalist view on Case-licensing, according to which Case is a feature of D^0, whereby nominal phrases not projecting a DP-layer will not participate in any Case-licensing mechanism, thus they will not be visible objects for the verb in the process of Case-checking. My proposal naturally incorporates some insights of the previous analyses, but it will be shown to be able to treat a wider range of data.

2. Previous analyses

2.1. The paradigms

Table (1) below shows the two paradigms in question, for the verb *lát* 'see', in present tense. The table is set up according

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[1] I wish to thank Katalin É. Kiss for encouraging me to pursue research of the present topic, and discussing it with me in detail. I am also grateful to Ágnes Bende-Farkas, László Kálmán, Anna Szabolcsi, and Gabriella Tóth for helpful suggestions, and to Michael Brody, András Komlósy, Gréte Dalmi, and Viktor Trón, for their various comments.

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to the number and person of the subject governing agreement. With other tenses/moods, and with front vowel harmony, some of the particular endings are slightly different, but the system of distinctions is the same, thus these alterations do not affect our discussion and results in any way.

(1)

	Subjective			**Objective**	
lát 'see'	SG	PL		SG	PL
1st	lát-ok	lát-unk		lát-om	lát-juk
2nd	lát-sz	lát-tok		lát-od	lát-játok
3rd	lát	lát-nak		lát-ja	lát-ják

The 'subjective' forms in the table have no correlation whatsoever with any property of any other phrase than the subject, however, these forms are used (among other cases) when the object is a 1st or 2nd person non-reflexive personal pronoun, except for the single case when the subject is 1st person singular and the object is 2nd person—in this case the form *lát-lak* 'I-see-you' is used. This is the sole occurrence of clear person agreement with the object.[2] As regards the 'objective' series, those forms do not show number and/or person agreement with the object, in the strict sense, either. On the one hand, though it is true that they basically stand with 3rd person objects, reflexives in any person (and reciprocals) trigger this paradigm, as well. On the other hand, it is not the case that any 3rd person object forces the objective inflection—as will be discussed in much detail below, indefinites in many cases cooccur with the subjective paradigm. Thus we can immediately conclude that any attempt to explain the distribution of the two paradigms in terms of number/person object agreement is flawed.

2.2. Definiteness Agreement?

The now traditional analysis of the phenomenon relies on the notion of definiteness of the object: roughly speaking, if the object is a definite NP, it goes together with 'objective' agreement on V, whereas if it is indefinite, the 'subjective' inflection is chosen, cf. (2).[3] (This leading idea is implemented in most of the "standard" descriptive literature on Hungarian, for example in Rácz & Takács (1974) [a brief reference grammar], and, at least for 3rd person objects, in Szabolcsi (1992, 1994), Farkas (1987).)

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[2] The suffix *-lak* can in fact be broken up into *-l-*, which is one variant of the marker of 2nd person, in the subjective paradigm (taking the place of *-sz* seen in Table (1) after stems ending in sibilants), followed by *-a-*, possibly analyzed as an epenthetic vowel, and the final *-k*, i.e. the 1st person subject agreement suffix (cf. the subjective endings).

(2a) Látom / *látok a fiút.
see-1sg-ob / see-1sg-sub the boy-acc
'I see the boy.'

(2b) Látok / *látom egy fiút.
see-1sg-sub / see-1sg-ob a boy-acc
'I see a boy.'

Furthermore, intransitive verbs pattern with verbs taking an indefinite object in this respect. This last fact is in itself a weak point of this analysis, in as much as it needs to be stipulated, since it is less than obvious that if the key factor in the choice between the paradigms is definiteness, then intransitive verbs should choose the 'indefinite' agreement affixes. Not having any object, they might as well go with the 'definite' agreement endings—the sole thing that could be evoked to remedy the situation is markedness, provided we rightfully regard the objective paradigm as more marked than the subjective one.[4]

There are several empirically rooted objections to the definiteness agreement hypothesis, too. Definiteness of a nominal phrase is to a large extent the function of the determiners. For instance, determiners such as *egy* 'a/one', *néhány* 'some', *öt* 'five', are called indefinite determiners, in keeping with the assumption that they render the NP they determine indefinite. Thus, as expected under the definiteness analysis, they occur with subjective agreement on the verb as objects; cf.

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[3] In the glosses all number/person agreement specifications are meant as agreement with the subject, unless explicitly indicated otherwise; 'sub' and 'ob' mark 'subjective' vs. 'objective' inflection; features (other than agreement) not overtly marked on a particular form, e.g. present tense indicative, are dropped from the glosses. Also, Hungarian displays no gender distinctions, not even on pronouns; for simplicity's sake I will use the masculine forms in the glosses and translations throughout.

[4] On a markedness account see Moravcsik (1988).

(3) Látok / *látom öt embert.
see-1sg-sub see-1sg-ob five man-acc
'I see five men.'

However, when the object includes a possessive construction, the verb usually appears with the objective paradigm, even though the same indefinite determiner is present (and, accordingly, the NP is still interpreted as indefinite), as in (4):

(4) Látom öt emberedet.
see-1sg-ob five man-2sgPOSS-acc
'I see five of your men.'

Another complication with a definiteness account is caused by the determiner *minden* 'every'. Normally, *minden* triggers subjective agreement:

(5) Látunk / *látjuk minden fiút.
see-1pl-sub see-1pl-ob every boy-acc
'We see every boy.'

This situation changes, however, in certain cases. For example, similarly to the above instances, the presence of a possessive construction results in a switch to objective agreement, as in (6a). Likewise, if *minden* is preceded by the definite article[5], the objective pattern appears, cf. (6b). That definiteness should not be a decisive factor here is illustrated by (6c), a minimally differing case, requiring subjective conjugation.

(6a) Ismerem (a te) minden titkodat.
know-1sg-ob (the you-NOM) every secret-acc
'I know your every secret.'

(6b) Elégetem a tőled kapott minden levelet.
burn-1sg-ob the from-you received every letter-acc
'I burn every letter received from you.'

---

[5] *Minden* (and a number of other determiners) cannot be directly preceded by the definite article, unless there is some intervening material between them. Szabolcsi (1994) offers a phonological account for this, claiming that there is nothing inherently wrong in the cooccurrence of the two, and in fact the article is there for syntactic and semantic purposes, but a PF-filter blocks them from appearing adjacent to each other, and deletes the article in those cases, while if there is some lexical material between them, the article can stay.

(6c) Elégetek minden tőled kapott levelet.
burn-1sg-sub every from-you received letter-acc
'I burn every letter received from you.'

Moreover, there are interesting cases with a possessive construction lacking both an overt possessor, and an overt article, where the subjective paradigm optionally steps in ((6d)). (This is judged to belong to certain dialects or literary styles, though, by speakers of "standard" Hungarian.)

(6d) % Ismerek (*a te) minden titkodat.
know-1sg-sub (the you-NOM) every secret-acc
'I know your every secret.'

Clearly, then, neither definiteness itself, nor the possessive construction (possibly seen as giving rise to definiteness), on its own, can be used as an explanation for the distribution of objective agreement.

A further problem is posed for the definiteness agreement hypothesis by the fact that 1st and 2nd person personal pronouns, when objects, occur with the subjective agreement pattern, witness (7a), as opposed to 3rd person object pronouns (7b).

(7a) Péter lát engem / téged / minket / titeket.
Peter see-3sg-sub me you(sg) us you(pl)
'Peter sees me / you(sg) / us / you(pl).'

(7b) Péter látja őt / őket.
Peter see-3sg-ob him them
'Peter sees him / them.'

It seems perfectly unreasonable to draw a distinction between 1st and 2nd person pronouns, on the one hand, and 3rd person ones, on the other, in terms of definiteness.[6] The only phenomenon that may suggest so is exactly the one in question, namely the divergence in the choice of V-agreement paradigms.

Finally, in certain dialects of Hungarian, there is an interesting contrast correlating with the alternation of agreement endings, but (crucially) not involving any necessary difference in definiteness, as shown in (8a) vs. (8b):

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[6] As Farkas (1990) notes, 1st and 2nd pereson pronouns can be pro-dropped, and since pro-drop in Hungarian is confined to definites, this is a syntactic argument, added to the obvious semantic argument, for regarding these personal pronouns as definite.

(8a) Olvastuk Péter (öt) versét.
read-past-1pl-ob Peter(-nom) (five) poem-3sgPOSS-acc
'We have read Peter's (five) poems / (five) poems by P.'

(8b) % Olvastunk Péternek (öt) versét.
read-past-1pl-sub Peter-dat (five) poem-3sgPOSS-acc
'We have read (five) poems by Peter.'

This contrast seems to be attributable to a difference in **specificity** of the object. In the absence of anything better, we may be inclined to say at this point that the specific–non-specific distinction plays a role in the choice between the objective and the subjective paradigms.

2.3. Specificity Agreement?

In the light of the problems discussed above, it is a natural move to examine the possibility that Hungarian 'object agreement' is at least partially a case of specificity agreement. More precisely, one might claim either that (i) the prime factor governing object agreement is definiteness, but under certain conditions (especially in the case of indefinite objects) specificity may intervene, or that (ii) specificity, rather than definiteness, is the key feature. Let us take a look at the previously mentioned problems once more, to see whether we are any better off with (i) or (ii).

As it happens, (3) is immediately problematic for a 'specificity only' approach. The object phrase *öt ember* 'five men' is ambiguous in this respect: it can be interpreted either specifically or non-specifically, however, it will invariably trigger subjective agreement. Moreover, the object in (4), albeit a possessive construction, is not necessarily any more specific than the one in (3), yet it tends to occur with objective agreement. A combined definiteness-and-specificity account may be more viable, as long as we can maintain that with non-possessives definiteness counts, and with indefinite possessives paradigm selection hinges on specificity. Definite possessives are obviously specific. The data in (6), however, gets us into trouble. Arguably, there is no definiteness or specificity difference between the objects of (6b) and (6c), yet the contrast in agreement patterns is perfectly clear.

It is necessary to make mention of Enç's (1991) concept of specificity, where a nominal phrase counts as specific iff its discourse referent is linked to some previously established discourse referent by a relation of inclusion, as opposed to the case of definites, where the relevant linking relation is identity. Now, it might seem promising to follow a line here building on the assumption that possessedness in fact satisfies the criteria of the inclusion relation, hence the possessive constructions would immediately qualify as specific, rightfully triggering objective agreement under a specificity approach. Enç's theory is all the more attracting, because it is syntactically anchored: in Turkish, specific objects stand with a distinctive case-suffix, in opposition to non-specific ones, which always occur bare. Hungarian thus apparently parallels the situation in Turkish, the difference being that here verbal agreement, rather than case morphology is the signal. However, on the one hand, the contrast in (8) does not easily yield itself to a neat explanation in Enç's terms, and, on the other hand, universal quantifiers show a striking mismatch: in Turkish they behave morphologically as specifics, and Enç actually argues that also from a semantic point of view they induce specificity. But in Hungarian, as (5) and (6) show, they clearly pattern with non-specifics. It is therefore reasonable to look for a better characterization of the Hungarian agreement choice than that in terms of specificity.

Furthermore, the split of personal pronouns remains a problem, unless one wants to claim that there really exists some specificity difference between 3rd person pronouns and the rest. Eventually, the data in (8) proves to be the only compelling motivation for seeking the solution in terms of specificity.

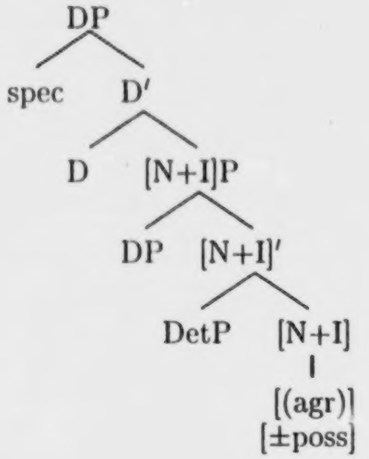
So what the data suggests is that although definiteness and specificity do show some correlation with the choice of object agreement, it is worth investigating other options, whereby it may turn out that this correlation is in fact an effect, rather than the cause.

3. The Proposal

3.1. A Generalization

For what follows, I adopt the phrase structure attributed to nominal phrases in Hungarian as presented in Szabolcsi (1992, 1994), shown here in (9).

(9)



An important property of this analysis is the strict separation of two classes of determiners. One class comprises the definite article *a(z)* 'the', and the demonstrative+article complex *ez/az a(z)* 'this/that–the'—their category is D^0, and they head the outmost projection of nominal phrases. In terms of distribution, they always precede nominative-marked possessors.

(10a) [$_{\text{DP}}$ a	[$_{\text{[N+I]P}}$ mi		barátunk]]
the		we(-nom)	friend-1plPOSS
'our friend'			

As opposed to this group, there is another class, including simple demonstratives (e.g. *e(me), ezen* 'this', *ama, azon* 'that'), quantifiers (e.g. *minden* 'every', *kevés* 'few', *egy(ik)* 'one'), and numerals (e.g *öt* 'five'). These are full maximal projections (DetPs in Szabolcsi's term), and occupy a slot following nominative-marked possessors.

(10b) [$_{\text{DP}}$ a	[$_{\text{[N+I]P}}$ mi	[$_{\text{[N+I]'}}$ öt	barátunk]]]
the	we(-nom)	five	friend-1plPOSS
'our five friend(s)'			

They are within a maximal projection smaller than DP; I will tentatively assume with Szabolcsi that they are in [N+I]P, whose head is an [N+I] complex (where I is the possessive–agreement inflection) and whose specifier is filled by the nominative possessor.[7]

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[7] Szabolcsi (1992, 1994) attributes entirely different func-

3.2. Non-possessives

Considering now the simple cases of 'object agreement', where no possessive construction is involved, we get a straightforward account on the following basis: whenever there is an overt D^0 in the object phrase, objective agreement is forced on the verb, and subjective agreement is the elsewhere case. Assuming a principle of projectional economy (see e.g. Grimshaw 1991), we can rephrase the situation, saying that whenever the object is a fully projected nominal phrase, i.e. a DP, it triggers objective agreement, and when it is not a full-fledged DP, i.e. a smaller nominal projection, such as [N+I]P, it does not—the default case being subjective agreement.

At this point it is clear already, why definiteness of the object nominal correlates with the paradigm selection. Either the article in D^0 is itself the source of definiteness, or (in keeping with Szabolcsi (1992, 1994)) there are matching rules between D^0 and DetP which ensure that the definite article only occurs when the DetP specifies its containing [N+I]P as [+definite] (or at least [+specific]).

Additional support for my hypothesis comes from incorporated objects, as illustrated in (11). (For a discussion of these, see e.g. É. Kiss (1994).)

(11)	Almát	eszünk /	*esszük.
	apple-acc	eat-1pl-sub /	eat-1pl-ob

'We are eating apples. (We are apple-eating.)'

As seen in the example, these bare nominals never stand with objective agreement. Since they are just X^0s, this is what we expect.

3.3. Possessives

Let us now turn our attention to possessives. Recall that in some of these cases there is an option whether such objects stand

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tions to these classes. She argues that D^0s are pure subordinators, not determiners in the semantic sense, while instances of DetP are determiners, and may consist merely of features like [±definite], [±specific], in association with the 'definite' article occupying D^0, hence the apparent role of the article in determining definiteness and specificity.

with subjective or objective agreement. The first-sight generalization seems to be that an overt definite article, or an overt nominative-case possessor, requires objective inflection (12a, b), while in the absence of both, that is, when the possessor is non-overt, or it is dative-marked and outside the object phrase, both agreement paradigms are grammatical, but with a specificity difference on the object (cf. (8a, b)).

(12a) Látom /	*látok	a	kutyádat.
see-1sg-ob /	see-1sg-sub	the	dog-2sgPOSS-acc

'I see your dog.'

(12b) Látom /	*látok	Péter	kutyáját.
see-1sg-ob /	see-1sg-sub	Peter(-nom)	dog-3sgPOSS-acc

'I see Peter's dog.'

The presence of an overt D^0 fits the scheme sketched above: it necessitates the projection of the DP-layer. Without it, it is at least possible for the nominal phrase to lack this outermost layer. More trouble is caused by the possessors. In Szabolcsi's now standard analysis (for details see e.g. her (1994)), the nominative-case possessor occupies the specifier of [N+I]P, while its dative-case counterpart is found in the spec of DP. Szabolcsi assumes that the two positions are movement-related: all possessors originate in the inner position, and can actually stay there, receiving nominative case, but they can (or in certain cases: must) raise up to the outer position, which is somehow associated with a dative(-like) ending, and which can serve as an escape hatch for further movement. Also, the outer position is an operator position (which the inner one isn't).

This picture is incompatible with my proposal, because (i) nominals with a nominative possessor and without an overt D^0 would count as less-than-DPs, and should thus occur with subjective agreement, contrary to the facts; and (ii) dative-marked possessors would imply the presence of the DP-layer, being in need of a SpecDP, so subjective conjugation (as in (8b)) should be impossible with them. For the latter, I assume that in (8b)-type cases there is no DP projected, rather, the possessor moves directly out of the [N+I]P-internal position. Overt D^0 is never found in these cases (that would immediately trigger the objective conjugation, and yield a definite interpretation).

We now have to say something about problem (i), i.e. the obligatory 'DP-ness' of nominative-possessor phrases. It is clear that if the possessor is non-overt (i.e. pro), then all depends on the presence vs. absence of an overt D^0, as shown in (13):

(13a) Láttunk / *láttuk kutyádat.
see-past-1pl-sub / see-past-1pl-ob dog-2sgPOSS-acc
'We have seen some dog(s) belonging to you.'

(13b) Láttuk / *láttunk a kutyádat.
see-past-1pl-ob / see-past-1pl-sub the dog-2sgPOSS-acc
'We have seen your dog.'

This neatly corresponds to the DP vs. [N+I]P difference. Furthermore, if the [N+I]P-internal possessor is an overt personal pronoun, the definite article must be present, and consequently the objective agreement and the definite reading is the only option:

(14) Láttuk a te kutyádat.
see-past-1pl-ob the you(-nom) dog-2sgPOSS-acc
'We have seen your dog.' (*'We have seen some dog(s) belonging to you.)'

This fact may serve as an indication that overt nominative possessors necessarily involve DPs, even if in many cases there is no overt D^0, although an overt D^0 is frequently an option, cf. (15):

(15) Láttuk (a) Péter kutyáját.
see-past-1pl-ob (the) Peter(-nom) dog-3sgPOSS-acc
'We have seen Peter's dog' (*'We have seen some dog(s) of Peter.')

Although it is true that if the nominative-marked possessor is a quantified nominal, the overt D^0 can never surface, this might be attributed to a PF rule deleting it, when it linearly immediately precedes the quantifiers in question—Szabolcsi (1992, 1994) needs a rule roughly to this effect in her analysis, too (cf. fn.5). It seems to be a legitimate assumption then, that the D^0 preceding nominative possessors is **syntactically** overt, though it may delete later, viz. at PF. Further support to the underlying presence of a D^0 comes from the fact that in each of these cases it is possible to have the possessor dative-marked, in SpecDP, followed by an overt definite article, with no meaning difference whatsoever, which is suggestive of the presence of D^0 with the nominative-case possessors, too.

Another interesting question concerns why object clauses mostly trigger objective agreement, as shown in (16):

(16) Tudom [(azt) hogy Péter okos.]
know-1sg-ob (it-acc) that Peter smart(-sg)
'I know that Peter is smart.'

In the detailed analysis of Hungarian embedded clauses, Kenesei (1994) proposes to treat *that*-clauses as [DP, CP] chains, where CP is theta-marked by the matrix V, while DP is in a Case-position, Case-marked by the matrix V. In (16), *azt* 'it-acc'(an expletive) represents this DP. Consequently, object agreement holds with this DP. *Az* 'it' is a DP-equivalent pronoun, so objective conjugation is expected. If, however, this position is taken up by a phrase that counts, in the sense of the discussion above, as less (or other) than DP, subjective agreement is what we expect, and it is what we find:

(17) Öt fiút$_i$ akarok [hogy megverj t_i].
five boy-acc want-1sg-sub that beat-imperative-2sg
'It is five boys that I want you to beat.'

To sum up briefly, these cases do not constitute counter-evidence; their behavior is in full compliance with our theory, once we have the correct analysis for them.

4. A Minimalist Analysis

4.1. DPs, Case, and Object Agreement

In this section I turn my attention to the technicalities of implementing my proposal in a minimalist framework, the basics of which are found in Chomsky (1995). In keeping with the currently standard assumptions about the functional structure of clauses, I posit an object agreement functional head and projection: Agr$_O^0$, and Agr$_O$P, and claim that Agr$_O$ is the locus of checking the object agreement features on the verb, which are directly related to the 'subjective' vs. 'objective' inflectional morphology. Moreover, object DPs have to move to SpecAgr$_O$ for reasons of Case checking. The essence of my proposal, in these terms, is that certain object phrases, which are not DPs, just NPs or [N+I]Ps, do not check features at SpecAgr$_O$, thus do not license objective agreement on V. In other words, they are Case-theoretically invisible to the verb+Agr$_O$ heads, unlike full DP objects, so the verbs theta-marking them will behave as intransitives from a Case-theoretic point of view. This immediately yields the fact that verbs taking 'indefinite' objects pattern with true (theta-)intransitives, as far as subjective vs.

objective agreement is concerned. Also, if the raising of XPs to agreement- and/or Case-checking positions is driven by the connection between the attracting features of functional heads, and the D-features of the raised phrases, then it is obvious that non-DPs will not get attracted to these positions. My proposal, then, is in line with Laka's (1993) analysis of Basque unergative predicates, sharing the DP vs. less-than-DP classification of objects with respect to Case theory—I actually generalize it to all predicates in Hungarian.

At this point it is natural to ask what is the Case-status of the less-than-DPs. I propose that they have inherent (theta-linked) Case, i.e. they are licensed via the theta-roles assigned to them. A remark is in place here about morphological case. Accusative morpho-case is not strictly linked to structural Case checking of objects, witness (18a, b).

(18a) Péter van itt a legtöbbet.
Peter(-nom) be-3sg here the most-acc
'Peter is here most frequently.'

(18b) Péter hatalmasat nőtt tavaly óta.
Peter enormous-acc grow-past-3sg last_year since
'Peter has grown enormously since last year.'

The accusative-marked phrases in these examples are not proper objects, and these verbs do not even have objective conjugation, yet the degree adverbials bear accusative case-suffixes as 'quasi-objects'. This shows that it is not unique for the non-DP proper objects to display accusative case-endings without being Case-licensed as objects.

4.2. Remaining Problems

The question immediately arises: If the hypothesis just laid out is on the right track, the difference between the raising of DP objects and the non-raising of non-DP objects should be either directly visible, or at least detectable somehow. Unfortunately, no such evidence can be shown. The reasons for this, I claim, are the following: (i) Hungarian is a language with wholesale overt A′-movement of nominals, to different operator positions, like topic, quantifier, or focus.[8] Moreover the verb, too, raises at least as high as Agr_S in the overt syntax. Therefore one cannot expect to directly observe the A-raising of the object to $\mathrm{SpecAgr}_O$. (ii) A-binding could be an indicator of raising an object over the VP-internal subject position. However, in her widely accepted analysis of Hungarian clause structure, É.Kiss (1987) claims that the Hungarian VP is flat, so subjects and objects are on a par, mutually c-commanding each other already at d-structure. This is confirmed by the lack of any subject-object asymmetries in this language. Moreover, as shown by É.Kiss (1991), thematic binding also plays a role in Hungarian. So it would in fact be more surprising to find binding theoretic consequences of object raising than to find their absence.

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[8] The original proposal to this effect is due to É.Kiss, especially her (1987); the matching between this set of positions and

I have not offered any explanation for the fact, discussed in the first part of the paper, that 1st and 2nd person object pronouns do not stand with objective agreement, unlike 3rd person ones, which is contrary to expectations, on the assumption that they are all DP-equivalents. Note, though, that this case was equally problematic for analyses relying on definiteness, specificity, or even person/number object agreement. Farkas (1987, 1990), in fact, outlines an analysis for them in terms of feature structures, splitting apart 1st and 2nd person nominal phrases from 3rd person ones (including 3rd person pronouns) by a feature inherent in 1st/2nd person which induces definiteness only at a level following morphological input, so these pronouns will not trigger the (definiteness-based) objective agreement. What this analysis fails to satisfactorily explain, though, is why that inherent feature should induce this particular behavior.

To cope with the problem, I have two directions in mind, for subsequent work, to find out which (if either) is correct. One of them is to examine the categorial status of 1st and 2nd person pronouns: if some evidence can be found that they are less-than-DPs, then they fit into the scheme without further stipulation. The other possible path would be to relate the present facts to an 'ergative-like' split in the behavior of pronouns. This can presumably be related to the claims of Paris (1990) and Lindhout (1993), who believe that the whole objec-

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those argued for in Beghelli and Stowell (1995) has been explored by Szabolcsi (1995), where she claims that Hungarian overtly displays all the operations that Beghelli and Stowell suspect at LF e.g. in English.

tive agreement phenomenon of Hungarian is an issue of ergativity: in these constructions the nominative-marked phrase is much like a possessor, where the possession is expressed by the nominally behaving verb. If this is true, then the fact that 1st and 2nd person pronouns (as objects) do not participate in this is similar to the pronominal split in several ergative languages: these pronouns only occur in the nominative-accusative pattern, not the ergative one.

I have not treated the sole case of person agreement with the object: the form ***lát-lak*** 'I-see-you'. If the abovementioned ergative split exists, it is presumably derived from the properties of the Agr categories (cf. Laka (1993)). In this perspective, ***lát-lak*** is possibly an instance of collapsed Agr's: the subject and the object are two specifiers of one Agr-head: Agr_{S+O}, hence the dual person agreement.

5. Summary

I have discussed the nature of the choice in agreement inflection paradigms in Hungarian, in dependence of properties of object phrases. I have shown that previous accounts, in terms of definiteness and specificity, are unsatisfactory in some respects, they are on the wrong track, in as much as correlations in these features are not the decisive factor in the selection of agreement paradigms, but the parallel effect of the syntactic triggers. I set up a distinction between nominals having and lacking a DP layer, and took this to be the key factor, which, through Case-checking at an object agreement functional projection, determines the paradigm choice.

I consider it one of the important gains of the proposed system, that the identical behavior of verbs without an object, and ones with an 'indefinite' object falls out trivially. I have also offered an answer to the question about possessive constructions: they take the objective conjugation, regardless of (in)definiteness, because they contain a D at least in syntax. Finally, some paths have been sketched for the treatment of object personal pronouns.

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Voah mei daett sei deitsh: Developments in the Vowel System of Pennsylvania German[*]

David Bowie

1. Introduction

The sound æ (as in English *rat*) is found in Pennsylvania German (hereafter PG), a minority language of North America; this phoneme is also found in English, but not in German.[1] This paper presents a preliminary report on the adoption of æ by the PG community using sources of PG data collected from the mid- and late nineteenth and twentieth centuries in order to bring up items that need to be looked at more closely in future fieldwork as well as to shed light on theoretical questions about borrowing in language contact situations.

2. The Language Contact Situation

PG is spoken in several areas of North America, principally but not exclusively in a roughly diamond-shaped area with corners in southern Ontario, southeastern Pennsylvania, southern Maryland, and the Indiana-Illinois border. Historically, the language is descended primarily from the Palatinate German dialects of roughly the Rhine River valley in modern-day western Germany as they were spoken by German-speakers who immigrated to North America from the seventeenth to the nineteenth centuries and who chose to maintain their native language;[2] today the language is spoken primarily among members of the "plain" Anabaptist groups,[3] and reports from the field show that PG is currently dying out among other groups (among others Huffines 1989; Meister Ferré 1991).[4] In any event, it is generally accepted that nearly all if not all PG speakers are bilingual in English and PG.

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[*] Many thanks to the several people who have helped in some way with this paper, foremost among them Hikyoung Lee, Anita Henderson, and Gillian Sankoff. Also, the first bit of the title is Pennsylvania German for "my father's German."

[1] Actually, æ is found in some dialects of German, but with very rare exceptions noted elsewhere in this paper not in any of the Palatinate dialects from which Pennsylvania German is descended.

[2] Note that this paper does not deal with Mennonite Low German, Amish High German, Texas German, or Wisconsin German, which, along with PG, Reed (1971) called the "American colonial German" languages.

3. Twentieth-century Distribution of æ in PG

A look at PG sources since the mid-nineteenth century shows that there is great disagreement over exactly how widespread æ is in PG. The text of *Es nei teshtament* (1993) (hereafter ENT), a translation of the New Testament into Pennsylvania German, contains a few words which have an æ, a complete list of which is shown in (1) (the digraph *ae* stands for æ; only one attested form for each root is shown).[5]

(1)

PG Word	**English**	**European German**
braekka	brag, boast	prahlen
daett	dad, father	Vater
graebt	grabs, catches	greift, fängt
haendla	to handle, to touch	behandeln, berühren
kshkaeddaht	scattered	zerstreut
licht-shtaend	light-stand, candlestick	Lichtstand, Kerzenleuchter
maemm	mom, mother	Mutter
maetsha	to match	zusammenpassen
naett	not	nicht
taena	to tan	gerben

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[3] That is, the conservative Amish, Mennonite, and Hutterite groups.

[4] For example, I have been informed that the youngest non-"plain" native speaker of PG in southeastern Pennsylvania is about fifty-five years old (Jennifer L. Griffith, p.c. 1997).

[5] Note that ENT is, according to its introduction, translated into a PG that is closest to that spoken in Ohio, while all of the other sources used in this paper are from eastern Pennsylvania. This difference becomes important later in the paper.

Other twentieth-century sources looked at for this paper contain glossaries or are themselves dictionaries, and so contain a much larger list of PG words with æ. These include works by Stine (1990), Haag (1982), and Buffington and Barba (1965), representative samples of whose lists are given in (2), (3), and (4) respectively. It should be noted that all of these sources use the digraph *ae* for the sound æ, but Stine also uses *ae* for the diphthong ei, giving rules for determining which use is which pronunciation;[6] therefore, only words using the pronunciation æ for *ae* by Stine's rules are included in the list in (2).

(2)

PG Word	English	European German
Aaschlaek	prank	Streich
ab/schnaebbe	to snap off	abschnappen
Aendi, Aent, Aenti	aunt	Tante
Blaeckbier	blackberry	Bronbeere
gaebbe	to yawn	gähnen
Kaerbs	squash	Kürbis
Maerr	mare	Stute
maessich	moderate	mäßig
raessle	to wrestle	ringen
waerklich	really	wirklich

(3)

PG Word	English	European German
aensere	to answer	antworten
Aermel	sleeve	Ärmel
Blaeckboard	blackboard	Tafel
gaern	gladly, like	gern
Kaerrich, Karrich	church	Kirche
Maetsch	match	Streichholz
Paepp	papa, father	Vater
Schtaern	forehead	Stirn
waer	who	wer
waere	to wear	tragen

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[6] Namely, that *ae* followed by an *h* or by a single consonant is pronounced ei, otherwise as æ. There are still some unclear cases, however, and those are not included in the list here.

(4)

PG Word	English	European German
Aeryer	vexation	Ärger
gaern	gladly, like	gern
maerricke, marricke	to mark, to notice	merken
Maetsch	match, contest	Match, Treffen
naeryeds	nowhere	nirgends
Paepp	papa, father	Vater
traewwele	to travel	reisen
verdaerwe	to spoil, to destroy	verderben
vorhaer	before, previously	vorher
waer	who	wer

A first glance at this data makes it seem that PG æ occurs in all sorts of places—places where it is related to (among others) the European German E as in *gaern* or *verdaerwe* in (4), to the English æ as in *Blaeckboard* or *Maetsch* in (3), or where it appears to be part of a completely new word as in *Aaschlaek* in (2). It should be noted, however, that at least one of these lists—(4), the one taken from Buffington and Barba (1965)—should be looked at with the realization that the authors were writing with the somewhat political express purpose of demonstrating that PG is a language closely related to European German, and therefore their glossary contains comparatively few overt borrowings from English. Even taking that into consideration, the observation about the multiple sources for PG æ appears to stand.

4. Nineteenth-century Distribution of æ in PG

There are not many sources describing PG phonemes from the nineteenth century; Learned (1889), however, put together his own list of PG borrowings from English along with a partial compilation of some earlier (still mid- to late nineteenth-century) PG authors that contain clearly German-origin words as well as English borrowings into PG that relate to the topic at hand. (5) contains a selection from Learned's list of borrowings from English

(Learned also uses *ae* for æ),[7] and (6a-e) contain words with the digraph *ae* from the PG authors Learned quotes.[8]

(5)	**PG Word**	**English**	**European German**
	aedzchëmə	adjourn	vertagen
	aettaétschə	attach	in beschlag[9] nehmen
	baenk	bank	Ufer
	baétschələr	bachelor	junggeselle
	daedi, dɔdi[10]	daddy	vater
	gaémle	gamble	um geld spielen
	kaérpet	carpet	teppich
	maénedzhə	manage	handhaben
	schmaert	smart	geschickt, klug
	waélli	valley	thal

(6a)	**PG Word**	**English**	**European German**
	aer	he, it	er
	faekt	fact	Tatsache
	gəhaeppənt	happened	geschehen
	staendə	stand, bear	leiden, tragen
	waer	had	war
(6b)	aeppirə	appear	erscheinen
	maeschin	machine	Maschine
	schtaertə	start	anlassen, anfangen
	traevəlt	travel	reisen

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[7] Learned (1889) also lists as a possible PG phoneme something written as *ȧe*; this is a completely different phoneme.

[8] The authors as given by Learned (1889) are as follows: (6a) contains words used by Bahn, (6b) by Fisher, (6c) by Harbaugh, (6d) by Horne, and (6e) by Rauch. Learned was unfortunately ambiguous as to which books his examples were taken from; the authors quoted all wrote shortly before Learned, however.

[9] Learned (1889) used German spelling conventions of his time, thus the lower-cased nouns.

[10] Learned (1889) used a symbol other than ɔ (but with the same meaning) here; I am unfortunately unable to reproduce the exact symbol used in the original.

	waert	will be	wird
(6c)	aeffekt	affect	einwirken
	gəbaerrt	barred	sperren
	haenkərə	hanker	sich sehnen
	kaerridzh	carriage	Kutsche
	næusgəschpaerrt	shut out	eingesperrt
(6d)	aerscht	first	erst
	kaerzlich	recently	kürzlich
	laerning	learning	Lehre
	schmaerter	smarter	klüger, intelligenter
	widərwaertichkeitə	misfortunes	widerwärtig 'disgusting'
(6e)	aedminischtrə	administer	verwalten
	aegriə	agree	zustimmen
	pripaert	prepared	zubereitet
	raeskəl	rascal	Schuft
	waert	will	wird

The items in (5), as noted previously, show only English borrowings, and therefore do not give any clue as to the comparative distribution of æ in PG words of German and English origin; as for the items in (6a-e), though they seem to show a tendency toward using the *ae* digraph in English-origin words as opposed to German-origin ones, there is no clue given as to how that digraph was in fact pronounced. A similar problem appears in the other source for nineteenth-century PG forms used in this paper, namely a series of letters written by PG speakers between (approximately) 1848 and 1864 collected by Parsons and Heimburger (1980). Although these letters show rather little borrowing from English—a fact that prompted Costello (1986), in remarking upon these letters, to venture that at least some of the writers of the letters were making it a point to approximate "standard" German—there is some, with possibly topical forms shown in (7).

(7)	**PG Word**	**English**	**European German**
	Atsetant	adjutant	beistehender Ofizier
	ar	he	er
	Cepten	captain	Hauptmann

It would seem from this that the one thing that can be taken as most likely is that the phoneme æ was *not* used in the word *Cepten* 'captain,' while whether it was used in pronouncing *Atsetant* 'adjutant' remains unknown. The spelling of the European German *er* 'he' as *ar* is included in the list as possibly topical because of the cases in other lists in which æ—or at least the digraph *ae*—occurs before *r* in German-origin words (and also in a few English borrowings); once again, though, it is impossible to come to a firm conclusion as to the intended pronunciation of the word in this case, although it is worth noting that the same writer spells the word *er* in nearly all other cases. A closer look at other data from the same time period might show patterns that could prove useful in coming to a conclusion on the subject.

5. General Observations of the Data

As noted before, all this makes it seem that there is no pattern to the occurrence of æ in PG in regard to whether the words that it appears in are of English or German origin. However, a closer look at the data in (1-6) shows that there is in fact a pattern. After eliminating the words which have cognates in both English and European German, one can group the words into three groups—the words with European German cognates, the words with English cognates, and the words with no clear cognates in either language; (8) shows the words with European German cognates. (In this and following lists, the number in parentheses after each PG word shows which list it previously appeared in.)

(8)	**PG Word**	**English**	**European German**
	aer (6a)	he, it	er
	Aermel (3)	sleeve	Ärmel
	aerscht 6d)	first	erst
	Aeryer (4)	vexation	Ärger
	gaern (3,4)	gladly, like	gern
	Kaerbs (2)	squash	Kürbis
	kaerzlich (6d)	recently	kürzlich
	laerning (6d)	learning	Lehre
	maessich (2)	moderate	mäßig

naeryeds (4)	nowhere	nirgends
neusgəschpaert (6c)	shut out	eingesperrt
Schtaern (3)	forehead	Stirn
verdaerwe (4)	to spoil, destroy	verderben
vorhaer (4)	before, previously	vorher
waer (3,4)	who	wer
waer (6a)	had	war
waerklich (2)	really	wirklich
waert (6b,6c)	will (be)	wird
widərwaer̥tichkeitə (6d)	misfortunes	widerwärtig 'disgusting'

The pattern is at once apparent—with the single exception of the word *maessich* 'moderate,' the æ in all of these words is followed by an *r* (as the result of a front vowel being lowered to æ), whereas æ occurs in the words with English cognates in nearly all environments.

Lowering of ε/e to æ before *r* in German dialects is not unheard of, and in fact Karch (1988) claims that the lowering of ε to æ is found in Mannheim in the Palatinate dialect region. However, in looking through Karch's transcriptions of speakers from the Palatinate one sees one and only one example of this, a speaker saying æʶsdn̩s 'first' rather than *erstens*, and that speaker consistently uses e or E before *r* in all other cases. Also, other, earlier sources describing the Palatinate dialect (Christmann 1931; Christmann, Krämer, Post, and Schwing 1965ff.) say absolutely nothing about this tendency, making it fairly safe to conclude, at least for the moment, that this lowering before *r* is a recent innovation in Palatinate German and that the phenomenon has evolved independently on each side of the Atlantic (although further investigation is, of course, warranted).

In addition, it is worth noting that the text of ENT (1993)—which, as was noted earlier, is the one text used in this paper which reflects an Ohioan rather than a Pennsylvanian dialect of PG—does not show this tendency to lower short front vowels before *r*; where one finds such words with high and mid vowels lowered to æ in other sources, in ENT one finds the same words with non-low vowels, as shown by a few examples in (9).[11,12]

(9)	**ENT**	**Other Sources**	**Meaning**
	eahsht	aerscht(6d)	first
	geahn	gaern(3,4)	gladly, like
	veah	waer(3,4)	who

Judging from these facts, it appears that what all this data reflects is two different processes—one of borrowing which is bringing English words into PG, and another which is a merger (or at least something acting like a merger)[13] which is lowering short front vowels before *r* in Pennsylvanian dialects of PG. The second of these items will be dealt with first.

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[11] It should be noted that this is not universally the case, as seen in some words which are shown in ENT as having lost the off-glide from the *r*, as *shtann* 'forehead' and *katzlich* 'shortly.' As it is unclear whether the *a*, in this class of words is from the nucleus of the vowel losing the off-glide or the nucleus being lost leaving nothing but the off-glide, these cases are left for future investigation.

[12] In general, ENT (1993) appears to reflect a tendency in the Ohio PG dialect to have generally fewer words with an æ. As can be seen by looking at (1), of the ten words with an æ used in ENT, two have cognates in both European German and English, two do not have a clear cognate in either language, and the remaining six are clearly borrowings from English. However, for the words shown in other lists as being PG cognates of English terms, ENT shows a tendency to use a term closer to the European German, as shown by a few examples in (A).

(A)	**ENT**	**Other Sources**	**Meaning**
	gebt andvat	aensere(3)	lit. gives answer
	deich	waélli(5)	valley
	sich…veist	aeppirə(6b)	lit. show oneself

[13] Whether it is or is not in fact a merger will have to be verified by future research; for the moment, I will assume that it is or at least can be treated as one.

6. Analysis of the Dialect Split

The lowering of short front vowels before *r* in Pennsylvanian PG is widespread, but it does have some exceptions, a few of which, taken from Stine (1990), are shown in (10).

(10)

PG Word	**English**	**European German**
Herbscht	autumn	Herbst
Kirz	shortness	Kürze
Schirm	protection	Schirm

However, upon looking through the lists of Pennsylvanian PG words provided by Stine (1990), Haag (1982), and Buffington and Barba (1965), one sees a relative lack of short front non-low vowels before *r*; it may or may not be that this is a sign of a merger in progress, but it does appear to indicate some present or past pressure on the language to eliminate the distinction between short front vowels in that environment.

In Ohioan PG as reflected in ENT (1993), however, one sees the reflexes of the front short vowels *i* and *e* before *r* as an *i* or an *e* followed by an inglide, written *iah* and *eah*; interestingly, there is no word in the entirety of ENT in which æ is followed by such an inglide *or* by an *r*. It should be noted also that in cases where other vowels were followed by an *r*, the post-vocalic *r* is in those cases also turned into an inglide.

A tentative explanation for the difference in treatment of short front vowels in these two dialects of PG is based on the different ways in which these dialects treat post-vocalic *r*. Whereas Pennsylvanian PG has maintained post-vocalic *r*, albeit in a fairly muted form (Stine 1990), Ohioan PG has gotten rid of it by changing it into an inglide (ENT 1993). This has allowed the Pennsylvanian PG *r* to have a lowering effect on preceding vowels as Karch (1988) claims happens in today's Palatinate German, whereas this could not occur in Ohioan PG because there was no *r* there to have such a lowering effect.

The question then arises as to where exactly the æ in PG comes from—does it come through the lowering process proposed for Pennsylvanian PG, or does it come from borrowing the sound from English? This can be definitively answered for Ohioan PG—in that dialect, it has come from borrowing English words containing æ. This is necessarily the case, because there is no mechanism for æ to arise through the lowering of the front vowels before *r*, as has happened in Pennsylvanian PG. This would mean that æ was first borrowed into PG (or at least Ohioan PG), after which æ became part of the PG phonemic system, allowing *maemm* 'mother' and *naett* 'not' to come into existence from whatever their earlier forms were; however, finding the exact means by which these two words achieved their current realizations in Ohioan PG remains an important question for future research.[14]

The picture is not so clear in Pennsylvanian PG, but it appears reasonable to conclude that æ was introduced into Pennsylvanian PG through borrowing from English, or at least that the possible environments for æ were expanded from pre-*r* environments to all environments through borrowing. The position that Ohioan PG non-lowered vowels are earlier forms than the lowered Pennsylvanian PG forms is, in any case, the correct position to take, given the principle that once something merges—in this case, the Pennsylvanian PG short front vowels before *r*—the merger is irreversible (Labov 1994), and therefore a dialect preserving uncollapsed forms preserves, at least in part, older distinctions.[15]

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[14] For the sake of comparison, Stine (1990), Haag (1982), and Buffington and Barba (1965) all agree that the Pennsylvanian PG word for 'not' is the æ-less *net*, and æ-less forms for 'mother' are also given—Stine and Haag give forms such as *Mamm*, *Mamma*, and *Mammi*, while Buffington and Barba give *Mudder* and *Midder*.

[15] Note that this difference in post-vocalic *r* and the vowels preceding it could provide a test case for Van Ness's (1990) claim that contemporary PG is diverging into various dialects from a fairly recent earlier homogenous form of PG, as a comparison of nineteenth-century Ohioan and Pennsylvanian PG post-vocalic *r* could show whether PG was in fact quite so monolithic a century ago.

7. Analysis of the Borrowing of æ Into PG

This leads directly to the process of borrowing English words that contain æ, which has occurred in both dialects of PG. Thomason and Kaufman (1988) (hereafter T&K) have come up with a model to explain various types of linguistic borrowing.[16] The T&K model is a descriptive model rather than an abstract structural model, and deals with what sorts of social stresses result in particular types of language change—for example, in the case of (at least Ohioan) PG the adoption of a phoneme not previously seen in the language, as well as the widespread borrowing into PG of various English lexical, syntactic, and morphological items not dealt with in this paper. The T&K model claims that in order for such widespread influence from one language to be felt in another while the original language is maintained, there must be extremely close contact between the two language groups, with such borrowing occurring most easily among speakers who as a group are fluently bilingual in the two languages. The claim is that if the borrowing language community maintains its language, it will be able to borrow from the other language while maintaining its own language.

The bilingualism of PG speakers has proven fairly easy to test—several researchers have tested PG speakers for bilingualism and have found that, at least for the "plain" segment of the population (among whom the most language change is taking place), PG-speakers are equally fluent in PG and English (among others Enninger *et al* 1984; Meister Ferré 1991). In addition, several researchers have found that there is close economic and moderately close social contact between PG speakers and the surrounding English-speaking community (Hostetler 1993; Kraybill 1994; Meyers 1994). It should also be noted that Huffines (1988) describes the linguistic convergence of PG toward English as a strategy of maintaining PG as a viable language. This matches well with the T&K model, which allows for such convergence while maintaining the original language; in short, the data available on the situation of PG borrowing items from English fits the T&K model but it must be said that one reason for this may be that the T&K model is quite general, and therefore quite difficult to disprove.

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[16] Fuller (1996) has criticized Thomason and Kaufman's (1988) approach as overly descriptive, and has proposed that the changes occurring in PG fit Carol Myers-Scotton's (1993) Matrix Language Frame model. Further research would be needed to determine which of these models works better for the case of PG.

8. Concluding Remarks and Summary

This paper has looked at a change in the phonemic system of PG which has proceeded differently in dialects of the language as spoken in Ohio and eastern Pennsylvania. Based on data from the mid- and late nineteenth and twentieth centuries, conclusions were drawn concerning the method by which æ, a previously unknown sound in PG, might have entered the PG system through borrowing from English. It was noted that this is the sort of borrowing predicted by Thomason and Kaufman's (1988) model of borrowing and shift in language contact situations in situations where there is such close cultural contact between language groups, and evidence was brought in to show that there is in fact close cultural contact between speakers of PG and the surrounding English-speaking population.

Future fieldwork needed to clarify the issues brought up in this paper and to test the conclusions drawn include above all a study of the use of æ in PG in both eastern Pennsylvania and Ohio, as well as a study of the tendency to lower short front vowels before an *r* in eastern Pennsylvanian PG. It could also be useful to undertake an acoustic analysis of the æ in Pennsylvanian PG words of German origin to determine whether the sound is actually the same as the æ in words borrowed from English, or whether the æ in German-origin words is only *nearly* merged with the æ in English-origin words.

In short, it has been possible to put forth certain tentative conclusions based on the data presented here, but confirmation of them awaits testing through fieldwork.

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Event Time Properties[*]

Gerhard Brugger

1. Introduction

The English present perfect (PrP) has an intermediate status between the past tense and the present tense as it relates events that occurred or began in the past to the present moment. The underlying assumption of a popular family of analyses is that the PrP is a combination of present and past tense, the latter being embedded under the former. *Embedded Past Theories* of the PrP have been proposed in variety of formulations (e.g., Reichenbach (1947), McCawley (1971), Hornstein (1990), Giorgi & Pianesi (1991,1996), Klein (1991), Smith (1991), Stowell (1993), a.o.). One of the most influential ones is Reichenbach's (1947) legendary formula E_R,S: the PrP expresses a non-past relation (",") between Speech Time (S) and Reference Time (R) and a past relation ("_") between Reference Time and Event Time (E).

(1) a. E_R,S present perfect
b. E,R_S past tense
c. E,R,S present tense
(2) a. $[\ldots[_{TP}\ S\ [\text{-P}]_{T}\ R\ [_{T/ASPP}\ [\text{+P}]_{T/ASP}\ E \ldots VP\ ]]$ (1a)
b. $[\ldots[_{TP}\ S\ [\text{-/+P}]_{T}\ R,E \ldots VP\ ]]$ (1b,c)

The PrP is distinguished from the past tense in the location of R and from the present tense in the location of the E. For technical reasons we represent these relations structurally as in (2): T relates R with S and T/ASP (i.e., Giorgi & Pianesi's T2) relates E with R.

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Adopting Stowell (1993) we assume that Reichenbach's time points are represented in the syntax. For the sake of simplicity we ignore the structural representation of the non-past relation between E and R in the case of the present and the past tense.

Corresponding to the difference in the location of R there are *Reference Time Properties* that differentiate the PrP from the past tense and assimilate it to the present tense (we will discuss them briefly at the end of this section). Analogously, we would expect there to be *Event Time Properties* that distinguish the PrP from the present tense and assimilate it to the past tense. However, this issue is more intricate. Only in certain usages are the Event Time Properties of the PrP comparable to the ones of the past tense. In other usages they have an intermediate status between past and present, which goes against the Embedded Past analysis. The aim of this investigation is to identify the Event Time Properties of different PrP types. The properties we will consider are the location of the event in relation to Speech Time (section 2), the licensing of Sequence of Tense (section 3) and the ability of the PrP to express different aspectual functions (section 4). We will conclude that the PrP varies with respect to these properties due to an ambivalence of the participle between a temporal and an aspectual function.

Since the paper focuses on the Event Time Properties, we conclude this section with a brief presentation of the Reference Time Properties in order to make clear which PrP-properties this paper is *not* about. First, there is a difference in standpoint between the PrP and the past tense: in PrP sentences "past events are not seen from a point also in the past, but from a point of reference which coincides with the point of speech" Reichenbach (1947:289); the past tense takes the standpoint of the past. For instance, while with the past tense sentence (3b) the speaker's inquiry concerns only a limited period of time prior to Speech Time, the PrP in (3a) inquires about calls within a period up to S.

(3) a. Has he ever called you?
b. Did he ever call you?
(4) Last week Cadu *has made/^{ok}made Caipirinha
(5) Einstein #has taught/^{ok}taught in Princeton

Second, the PrP is incompatible with definite past time denoting adverbs, such as *yesterday*, *three years ago*, *on September 7th*

1944, etc. (the so-called *Past Adverb Constraint*).[1] Third, PrP sentences ascribe to their topic a property that results from their participation in the prior situation: *Chomsky has taught at Princeton* attributes to Chomsky the property of having done this action (Smith's (1991) *Participant Property*, Inoue (1979)). There is a pragmatic felicity requirement on the use of the perfect: that the topic of the PrP sentence be in a position to be attributed this property. Some well-known examples, such as (5), turn on the fact that the subjects are not alive at Reference Time.

2. The Vagueness Approach

A challenge for the Embedded Past Theories is that the event does not always strictly precede speech time. As is well-known, the PrP is often compatible with an interpretation where the event prevailed throughout some interval stretching from the past into the present (the *continuative interpretation*). For instance, the sentences in (6) can mean that John still lives in London and that he is still sick.

(6) a. John has lived in London for three years
b. John has been sick since Christmas

The sentences can also have an *existential interpretation*. (6a): there has been a three year interval at some time in the past at which John lived in London; (6b): there has been a time in the past between Christmas and now during which John was sick.[2]

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[1] We ignore here that the Past Adverb Constraint is not an issue of Reference Time only but also of Event Time: sentence final past time adverbs can modify the Event Time in e.g., past perfect sentences. Strictly speaking, contrasts like (4) can be related to Reference Time only when they involve sentence initial time adverbs. Due to space limitations we will not explore this interesting topic in this paper.

[2] Notice that the adverbials in (6) are necessary for the continuative interpretation to arise. Without them there is no ambiguity. *John has lived in London* is existential and means that John's living in London took place at some time in the past, but that he no longer lives there. In other words, the continuative interpretation requires a temporal specification: the starting point (with: *since Christmas*), duration (with: *for three years, long*) or endpoint of the event (with: *so far, up to now*) has to be specified. Notice also that certain adverbs, such as *once, twice, several/several times*, are only compatible with the existential interpretation: *John has been sick twice/several times (since*

In an Embedded Past Theory the second interpretation is the basic one and the continuative interpretation has to be derived from that in some way. Many proponents of the Embedded Past Theory do not address this issue. Others relate the continuative interpretation to a vagueness of the actual duration of the event. That is, although the event time precedes speech time the event itself need not have come to an end before speech time. As Klein (1991:539f) states "the fact that *Chris has been in Pontefract* does not exclude that *Chris is in Pontefract* is due solely to the fact that a hidden parameter – the duration of the [event] – is ignored. [...] For *Chris has been in Pontefract* to be true, all that is required is that SOME time span, one at which Chris was in Pontefract, precedes [speech time]" (Klein (1991:539f)). That is, the Event Time is in the past in any case, but its location is "indefinite", which leaves open whether the event still goes on or not. We will refer to this proposal as to the *Vagueness Approach*.

The Vagueness Approach seems appealing as it attempts to reduce the meanings of the PrP to one basic meaning. In fact, most researchers that have addressed this question have concluded that the different meanings are due to contextual elements and the communicative context, and not to distinct underlying semantic representations. Nevertheless, this approach will be rejected in the course of the argumentation as being too simplistic to account for the full range of differences between the PrP interpretations. For instance, it is unclear how an approach where the continuative interpretation is an issue of vagueness can account for sentences such as *Mario has been living in Padova* which can only have the continuative interpretation. A related problem is that in some languages, such as Portuguese, the PrP can only have the continuative interpretation (see section 2). In the following section we will concentrate on a problem that concerns the temporal interpretation of clauses that are embedded under PrP sentences.

3. Sequence of Tense

In English, a past tense complement of a past tense sentence can be interpreted in two ways: as past shifted or as simultaneous with respect to the superordinated past tense. (7a), for instance, can either mean that Mary was sick at a time that is prior to the time of John's claiming (past shifted), or that Mary was sick at the time of John's

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Christmas).

claiming (simultaneous). The same ambiguity arises when the superordinate tense is a PrP (7b). Past shifted: Mary's sickness precedes John's claimings; simultaneous: Mary was sick at the times of John's claimings.

(7) a. John claimed that Mary was sick
b. Since Christmas, John has claimed (several times) that Mary was sick

Sequence of Tense has two components. First, the Event Time of the superordinate clause binds the Speech Time of the subordinate clause as indicated by the co-indexation in (8).

(8) a. ...S $[+P]_T$ R,$\mathbf{E}_i$...V $[_{S'}$...$\mathbf{S}_i$ $[+/-P]_T$ R,E...V+ed] (7a)
b. ...S $[-P]_T$ R $[+P]_{T/ASP}$ $\mathbf{E}_i$....V $[_{S'}$...$\mathbf{S}_i$ $[+/-P]_T$ R,E...V+ed] (7b)

The observed ambiguity is due to different values of the embedded T. When the value of the embedded T is positive the Reference Time of the embedded clause is shifted further into the past. The simultaneous interpretation arises when the value of the embedded T is negative: the embedded Reference Time is not shifted into the past but co-temporaneous with the embedded Speech Time. This mirrors the common assumption that in the simultaneous construal the embedded past tense is a non-past rather than a past tense, semantically: Mary "is" sick at the time of John's claiming.

The second component licenses the non-past interpretation of the subordinate past tense, i.e., the [-P] in T. In general, an embedded past tense can have the simultaneous interpretation when there is a superordinate tense that expresses a past relation. Stowell (1993) derives this generalization by assuming that the past tense morpheme *-ed* is a *Past Polarity Item* in English:

(9) Stowell 1993:
-ed is a [+P] polarity item

This is to say that a verb can have past tense morphology even if within its own clause no past relation is expressed – it is sufficient that a superordinate clause expresses a past relation. The value of the embedded T in (8) can be negative because there is a superordinate T with a positive value that can license the past morpheme of the embedded verb.

It is important to note that only the existential but not the continuative PrP can license the simultaneous interpretation of an embedded past tense. (10) with the continuative interpretation of the PrP (i.e., John is still claiming) strongly implies John refers to a time in the past at which Mary was sick.

(10) Since Christmas John has claimed/been claiming that Mary was sick

This observation is not at all surprising when we keep in mind that the continuative PrP is like the present tense in that the event obtains through Speech Time. Neither one licenses the simultaneous interpretation: with respect to Sequence of Tense the continuative PrP behaves like the present tense sentence *John is claiming that Mary was sick*. This is especially clear in Portuguese whose PrP form (auxiliary *ter* plus past participle) has only the continuative interpretation (cf. e.g., Comrie 1985:85). In addition, certain verbs, such as verbs of volition (*querer* "want", *desejar* "wish, desire"), verbs of fear (*temer*, *recear* "to be afraid of, to fear"), verbs of influence and permission (*recomendar* "recommend", *exegir* "require", *ordenar* "order"), trigger *strong* tense agreement on their sentential complements. As illustrated in (11), the complement must have the same tense as the superordinated clause: when the superordinated clause is in the present tense, the complement is in the present tense; when the former is in the past, the latter is in the past (cf.: Raposo (1985, p.78f)). Crucially, when these verbs appear in the PrP, the complement must be in the present tense and cannot be in the past tense (12).

(11) a. Eu desejo que a Maria ganhe/*ganhasse o prêmio
I wish that Maria wins/won(subj) the prize
b. Eu desejava/desejei que a Maria *ganhe/ganhasse a corrida
I wished that Maria wins/won(subj) the race
(12) O João tem querido que a Maria faça/*fizesse café forte
João has wanted that Maria makes/made(subj) strong coffee

(12) means that João has been and still is (continuative) in a state of wanting that Maria makes strong coffee. The contrast indicates that the Sequence of Tense properties of the continuative PrP are that of a present tense.

These observations indicate that a uniform analysis of the existential and the continuative PrP is not tenable. In particular, if both types expressed a past relation, as assumed by the Embedded Past Theories, both types should license the simultaneous interpretation of an embedded past tense. Klein's assumption that the difference is due to a "hidden" parameter does not help very much either – unless one reformulates the Sequence of Tense Rule in some way in order to incorporate this "hidden" parameter. If we want to keep the Sequence of Tense rule as formulated in this section we have to differentiate the two PrP types structurally. More specifically, the data in (7b), (10) and (12) imply that the existential, but not the continuative type, hosts a [+P] that is accessible for an embedded past tense.

In many grammars the PrP is said to express the present effects or results of a past action. (13a), for instance, indicates persistence of the result of John's arriving, i.e., that he is still here; (13b) implies that Bill is now in America, or is on the way there, this being the present result of his past action of going to (setting out for) America (Comrie (1976, p.56ff)). The corresponding past sentences *John arrived* and *John went to America* do not have this implication (of course, they does not exclude that John is still here or in America, respectively). We refer to this usage as the *resultative* PrP.

(13) a. John has arrived
b. Bill has gone to America
(14) a. John has gone to America several times/twice/before …
b. Have you ever gone to America?

This type has to be distinguished from the types we introduced in the preceding section: the continuative PrP, where the action itself is still going at the moment of speaking, and the existential PrP, which indicates that a given situation held at least once in the past without focussing on the present result of the action. We must notice, however, that the sentences in (13) can have the existential interpretation. This is especially the case when they are modified by certain adverbs (cf. (14)). In absence of such adverbs, the resultative interpretation seems to be the prevalent one.

Again, the Embedded Past Theories analyze these two types as being essentially the same. In both cases the Event Time is in the past before Reference Time and Speech Time, and e.g., "contextual information tells us [whether] the consequences are still to be felt ('resultative perfect')" or not (Klein (1991:539)). Again, the interpretation of embedded tenses tells us that this is not that simple. Notice that the present result expressed by *John has convinced the coach* is that the coach is convinced now.

(15) a. John convinced his coach that he was too weak to play the game
b. John has convinced his coach that he was too weak to play the game
c. John has convinced his coach many times that he was too weak to play the game

Intuitively, (15a) and (15b) differ in the following way: while the first sentence is compatible with a situation where John convinced the coach right before or during the game of his weakness, the second one strongly suggests that John convinced the coach after the game. In other words, what we notice is a difference in the licensing of the simultaneous interpretation of the embedded past tense: John's being weak can overlap with his convincing the coach in (15a) but not in (15b) with the resultative interpretation of the PrP. The resultative PrP behaves like a present tense: with respect to Sequence of Tense (15b) is not unlike *The coach is convinced that John was to weak too play the game.*

We observe that when the PrP is used to indicate the present result of an action that occurred in the past, an embedded past tense cannot be interpreted as simultaneous with respect to that action. Conversely, when the PrP is of the existential type, i.e., when it does not focus on present results, the simultaneous interpretation is perfectly acceptable (cf. (15c)).

This contrast is analogous to the one between the continuative and the existential PrP which we discussed in the preceding section. Only the existential type behaves as predicted by the Embedded Past Theories. If it were only "hidden" parameters or "contextual information" that distinguished the PrP types, the simultaneous interpretation should be licensed in all cases. Since this is not the case, we have to differentiate the PrP types structurally.

4. Aspect and tense

The difference between the resultative and the continuative type is aspectual. The notion of *telicity* (Garey (1957)) is relevant: telic situations give rise to the resultative interpretation, a-telic situations give rise to the continuative interpretation. Examples for each situation type are given in (16).

(16)	telic situations	atelic situations
	a. go to America	d. be sick
	b. arrive	e. live in London
	c. build a house	f. claim (activity)

In (17a) we define telic situations as comprising two parts: an event e and the *Resultant State* RS of the event. A telic situation is an event that "necessarily includes a goal, aim or conclusion" (cf. e.g., Brinton (1988:26)). When the goal, aim, or conclusion is reached, the action exhausts itself and passes into a state that is the result of the action. The bracket "]" in (17a) indicates the terminal point of the action and the starting point of the Resultant State. For (16c) ***build a house***, for instance, the event is 'the building of a house'; the Resultant State is 'the house being built'. For (16a) *go to America* the event is 'the setting out for America'; the Resultant State is 'be in (or on the way to) America'.[3]

(17) a. telic [--e--]-----RS-----
b. a-telic [--------e---------]

A-telic situations are less complex (cf: (17b)). We assume that they only comprise the event – e.g., 'the event of being sick' in the case of (16f) – but no Resultant State.

By structuring situations as in (17) we can account for the meaning of the resultative and the continuative PrP without recurring to temporal past relations. We assume that the participle of PrP sentences can have the aspectual value TERM (short for "terminal"): it views the terminal stage of the situation (cf: (18)). In the case of telic situations it views the Resultant State; in the case of a-telic situations the terminal stage is the final part of the event. The viewpoint is indicated by "__" in (18).

(18) a. TERM views the terminal stage of the situation
b. telic [--e--]-----RS-----
c. a-telic [--------e---------]

---

[3] Notice that in the latter case the Resultant State is more complex as it includes a process (be on the way to America) and a state (be in America).

(19) ... $[\text{-P}]_{T}$ ... TERM$_{T/ASP}$ ...V continuative and resultative

We assume furthermore that the PrP can have (19) as the underlying representation in English. Since no past relation is expressed, the viewpoint of the participle and Speech Time are co-temporal. That is, when the situation type is telic, as is the case in *Bill has gone to America*, the Resultant State of that situation holds at Speech Time. In other words, TERM gives rise to the interpretation that *now* Bill is in (or on his way to) America. It is important to note that in our conception Resultant States can cease to hold. For instance, when Bill leaves America, the Resultant State of the event 'Bill go to America' ends. This situation is not compatible with the resultative reading of the PrP sentence.[4]

When the situation is a-telic, as in *John has been sick since Christmas* the final part of the event is co-temporal with Speech Time. Of course, by saying this we do not intend to imply that the event actually ends at or immediately after Speech Time. In fact, the sentence does not exclude the possibility that John continues to stay sick. What TERM views is the final part of the event as it has been experienced so far which does not imply the event's termination. Crucially, TERM implies that part of the event precedes Speech Time. In fact, the continuative PrP is not used for describing *momentary states*. For instance, in order to follow the zig-zag-course of a fast moving object (e.g., a bug), one would not use the PrP (*#Now it has been here*) but the present tense (e.g., *Now it is here – and now it is there – and now it is here again –* etc.) which does not imply that the event extends into the past.

The assumptions in (18) and (19) also account for the Sequence of Tense facts observed in the preceding sections. The continuative (cf: (10a)) and the resultative PrP (cf: (15b)) do not license the simultaneous interpretation of an embedded past tense because they do not express a past relation. Since there is no [+P] in the PrP, the [+P] that licenses the past morpheme in the embedded clause must be in the embedded clause itself (cf. (20)).

---

[4] Resultant States as part of telic situations have been proposed by many researchers. However, it is often assumed that Resultant States, once initiated, never cease to hold (e.g., Parsons 1994). In this view, Bill would be in the state of having gone to America forever, independently of whether he is still there or not. Furthermore, Parsons, among others, defines Resultant States also for a-telic predicates. For instance, as soon as John starts living in London he is in the resultant state of having lived in London - independently of whether he still lives there or has already moved to another place. As these assumptions nullify the distinctions between the PrP types we reject them.

(20) a. …S $[\text{-P}]_T$ R TERM$_{T/ASP}$ E_i…V$[_{S'}$…S_i $[\text{+/*-P}]_T$ R,E…V+ed]

The existential PrP is different. First, the entire situation (including the event's Resultant State) can precede Speech Time. Second, the situation type does not matter: PrPs of telic and of a-telic situations can have the existential interpretation. Third, a subordinate past tense can have the simultaneous interpretation. These three properties were discussed in the preceding sections and follow from the Embedded Past analysis (21): the [+P] in T/ASP shifts the time of the event into the past (22a), irrespectively of the situation type (22b), and can license a subordinate past tense morpheme (22c).

(21) … $[\text{-P}]_T$ … $[\text{+P}]_{T/ASP}$ … V existential
(22) Event Time Properties of the existential PrP
  a. E_S
  b. With all situation types
  c. Licenses simultaneous interpretation of a subordinate past tense
  d. Momentary states
  e. Internal stages
  f. Inchoative aspect

It is important to notice that the existential PrP, unlike the continuative and the resultative PrP, does not specify any aspectual value. This accounts for the possibility of a variety of aspectual interpretations that are not available with the other PrP types whose aspectual value is already fixed by TERM. First, the existential PrP, in contrast to the continuative PrP, can be used for momentary states (22d). That is, the existential PrP does not imply that the denoted event extends into the past. For example, in order to report the past locations of a fast, zig-zag moving object (the bug, see above) one can say use the existential PrP. *It has been here* with the existential interpretation does not imply that the object has stayed here location for longer than a single moment.

Second, the existential PrP allows focusing on the internal stages of the situation (22e). In a sentence like *When I visited John he was sick/cooking* the background event 'John be sick/cooking' holds over an interval that includes the visiting-event expressed by the when-clause. This temporal relation is preserved when the whole sentence is shifted into the PrP:

(23) Often when I have visited him he has been sick/cooking

One might object that the superordinate PrP in (23) could be an instance of a continuative PrP where the final-stage viewpoint of TERM is relativized to the Event Times of the when clause with the visiting times being co-temporaneous with the final stages of John's cooking/being sick. A possible paraphrase of this reading: at the time of my visits John has already been sick/cooking for a while. However, this view would not account for two observations. First, the superordinate clause can be in the past tense without changing the meaning: *Often when I have visited him he was sick/cooking* and (23) have the same meaning. Second, the continuative PrP cannot be combined with *still*: **John has still been sick (since Christmas)*, whereas existential PrPs like (23) can:

(24) a. Often when I have arrived at the boarding gate (hoping to get on the plane immediately) they have still been working on the final formalities
b. Often when we have arrived at the wedding party to take all the photographs the bride and the groom have still been getting ready

Third, the existential PrP can even have inchoative aspect (22f):

(25) Often when I have read just half of a detective story I have immediately known what the outcome would be

(25) expresses that there were many times that I *started to know* the outcome when I was halfway through the story. In other words, the superordinate PrP focuses on the coming about of a state. This interpretation is in contrast to the meaning expressed by TERM as it views the initial stage of the situation.

The existential PrP shares these properties with the past tense. Also the past tense can refer to momentary states, express inchoative aspect (e.g., *Suddenly he knew the answer*) and focus on the internal stages of the situation. As for the latter, the progressive form is required for both past tense and existential PrP when the predicate is non-stative. The parallel behavior is follows from the parallel underlying structure: both express a past relation (in T or in

T/ASP) that shifts the Event Time into the past with respect to Speech Time. They only differ with respect to the location of the mediating time point R; in other words, they only differ in their Reference Time Properties.

In contrast, the opposite Event Time Properties of the continuative and the resultative PrP are due to the absence of a past relation and the fact that the aspectual value is specified with TERM.

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Polarity in Spanish, French, and English[1]

Dee Cain and Renée J. O'Brien[2]

1. Introduction

Spanish, French, and English all contain Negative Polarity Items (NPIs), words that must be licensed by a co-occurring negative element, with the NPI in a downward-entailing environment. This paper briefly reviews prior syntactic accounts of NPIs, along with a major assumption on which they are based. We then offer a revised analysis using the Distributed Morphology model of Halle and Marantz (1993, 1994). The analysis presented here, in contrast to earlier accounts, unifies the explanation of polarity in matrix declaratives in these three languages.

2. Data and Prior Approaches

Examples of NPIs in matrix declaratives and their required licensers appear in (1) through (3):

(1) Spanish (a) *No* amo a *nadie*.
(b) *Amo a *nadie*.

(2) French (a) Je *n*'aime *personne*.
(b) *J'aime *personne*.

(3) English (a) I do*n't* love *anybody*.
(b) *I love *anybody*.

In the first example of each pair, the first italicized element licenses the NPI in object position. The absence of the licenser results in ungrammaticality. In Spanish, for instance, *no* licenses the appear-

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[2] Names appear in alphabetical order.

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ance of *nadie* in object position in (1a); the absence of *no* results in ungrammaticality, as seen in (1b).

Although the three languages exhibit the same behavior with respect to these elements in object position, they differ as to whether the same elements can appear in subject position. They also differ as to whether the words that do appear must co-occur with an overt negative marker:

(4) Spanish (a) *Nadie* trabaja.
(b) **Nadie no* trabaja.

(5) French (a) **Personne* travaille.
(b) *Personne ne* travaille.

(6) English (a) **Anybody* works.
(b) **Anybody* does*n't* work.
(c) *Nobody* works.

In Spanish, use of the negative clitic *no* is ungrammatical when *nadie* appears in subject position, while in French, the presence of *ne* is obligatory. English differs from either of these languages: while the presence of the clitic *n't* is ungrammatical (as in Spanish), the polarity word used in object position (*anybody*) cannot be used in subject position and receive a negative interpretation, as is seen in (6a). Instead, a different word is needed, i.e., *nobody* in (6c).

In addressing these differences, some researchers have posited that languages are actually of two types: Negative Concord languages and Negative Polarity languages. For example, Spanish is often considered a Negative Concord language, since as in (1a) two overt negative elements are obligatory. Standard English, however, is considered a Negative Polarity language because of data such as the *anybody/nobody* distinction in (3) and (6). Interestingly, the non-standard dialect of English that uses *nobody* rather than *anybody* in object position (*I don't love nobody*) is also an example of Negative Concord. This concord/polarity distinction boils down to the relative degree of overt negative morphological marking in a particular language, and the structural positions in which differing words may appear.

Analyses in the Principles & Parameters framework (Chomsky 1981, 1986) were unable to account for the range of facts in (1) through (6). Proposed solutions include positing two different kinds of what Longobardi (1986) calls "n-words"; i.e., in Spanish, the *nadie* that appears in object position is different from the *nadie* that appears in subject position. In contrast, Laka (1994) posits that it is the same *nadie* that appears in the two different positions, but this account does not capture the *anybody/nobody* alternation in standard English. Another approach adds to the inventory of functional projections to account for polarity. For instance, Zanuttini (1995) proposes further functional architecture, the *polarity phrase* or PolP, in addition to the projection NegP used in other accounts.

All of these analyses share the assumption that the lexicon, which includes all semantic, categorial, and theta-role information as well as phonological underlying representations, is situated presyntactically:

(7) Principles & Parameters Model

Lexicon
|
(SYNTAX)[3]
/ \
PF LF

Under this view, lexemes and morphemes are base-generated into the terminal nodes of the phrase structure. Syntactic operations move or merge items, and the morphology visible at PF directly reflects the derivational processes involved. Instead of adhering to this view of the lexicon, we adopt a strictly featural approach, as outlined in the following section.

3. Distributed Morphology and Polarity

Rather than assuming the presyntactic lexicon of earlier accounts, we assume that the phonological content of vocabulary items is not a part of the phrase structure. The Distributed Morphology (DM) model of Halle & Marantz (1993, 1994) resituates phonological information from a pre-syntactic to a post-spell-out position:

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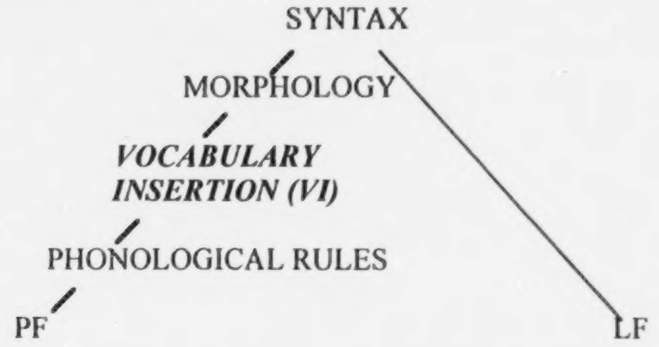
[3] The number of levels operant in the syntax is not a consideration in this analysis.

(8)



This restructuring changes what appears in the terminal nodes of the phrase structure. Instead of actual lexemes and morphemes appearing in the tree, only syntactic, semantic, and morphological *features* occupy terminal nodes. Phonological features are not supplied until after all syntactic and morphological operations, at the level of Vocabulary Insertion (VI). The Vocabulary Item, therefore, is as seen in (9):

(9) The Vocabulary Item

semantic features
syntactic features ↔ phonological features
morphological features

For example, the English subject pronoun *I* appears in [Spec, IP] as the feature bundle in (10). VI, plus the operation of any applicable phonological rules, would result in the bundle's surfacing as the diphthong /aI/ at PF:

(10)

Feature bundle		VI		PF
+HUM +1P +SG +NOM	⇒	/aI/	⇒	[aI]

We extend this featural analysis to the polarity items in (1) through (6). In the phrase structure by spell-out (Σ), only feature bundles occupy the terminal nodes where items such as *anybody* and *nobody* are inserted at VI.

Such a featural approach carries with it the responsibility to flesh out the entire set of features in terminal nodes, as well as any interdependencies these features may have. Feature interdependency is common in phonology, where, for example, the manner feature [+/-distributed] is dependent upon the place feature [+coronal]. These types of interfeatural relations will be shown with embedded brackets, e.g., [+cor [+/-dist]].

Regarding feature interdependencies in the phrase structure, we propose that the feature for polarity is dependent on the feature for indefiniteness. Note how indefinites alternate in polarity (e.g., *a woman/no woman*, or *something/nothing*) while definites do not (*the woman*).

In addition to this interdependency between polarity and indefiniteness, we further posit that polarity items have a feature bundle that is *underspecified* for polarity. Therefore, these items, which in prior accounts have been referred to as *Negative* Polarity Items, will henceforth be considered *Indefinite* Polarity Items, or IPIs. For example, the feature bundle of a human IPI is shown in (11), where the underspecified feature [POL X] is dependent upon the indefinite value within which it is embedded:

(11) [+HUM; [-DEF **[POL X]**]]

This characterization of IPI feature bundles allows for a broader classification of items such as *anybody/nobody/somebody* than was previously possible. We propose that all three of these items are base-generated with the bundle in (11). Differing surface forms depend on the polarity value that the bundles acquire in the syntax.

This polarity value is acquired by an IPI based on the features in PolP (Zanuttini 1995), as shown in (12) for Spanish. Where the gap is filled in with [+NEG], the feature bundle surfaces as *nadie*. If the gap is filled in by the feature [+POS], however, the surface form is *alguien*:

(12) [+HUM; [-DEF [+ NEG]]] ⇒ *nadie*
[+HUM; [-DEF [+ POS]]] ⇒ *alguien*

For each of the languages under analysis here (including both the standard and non-standard dialects of English), the presence of negative features in PolP results in the surface forms shown in (13):

(13) [+HUM; [-DEF [+NEG]]] ⇒ *nadie*
personne
anybody/
nobody (standard)
nobody (non-std.)

[-HUM; [-DEF [+NEG]]] ⇒ *nada*
rien
anything/
nothing (standard)
nothing (non-std.)

Conversely, the presence of positive features in PolP results in the surface forms you see in (14):

(14) [+HUM; [-DEF [+POS]]] ⇒ *alguien*
quelqu'un
somebody

[-HUM; [-DEF [+POS]]] ⇒ *algo*
quelque chose
something

The following section demonstrates how this analysis accounts for the data in (1) through (6) and outlines several of its advantages.

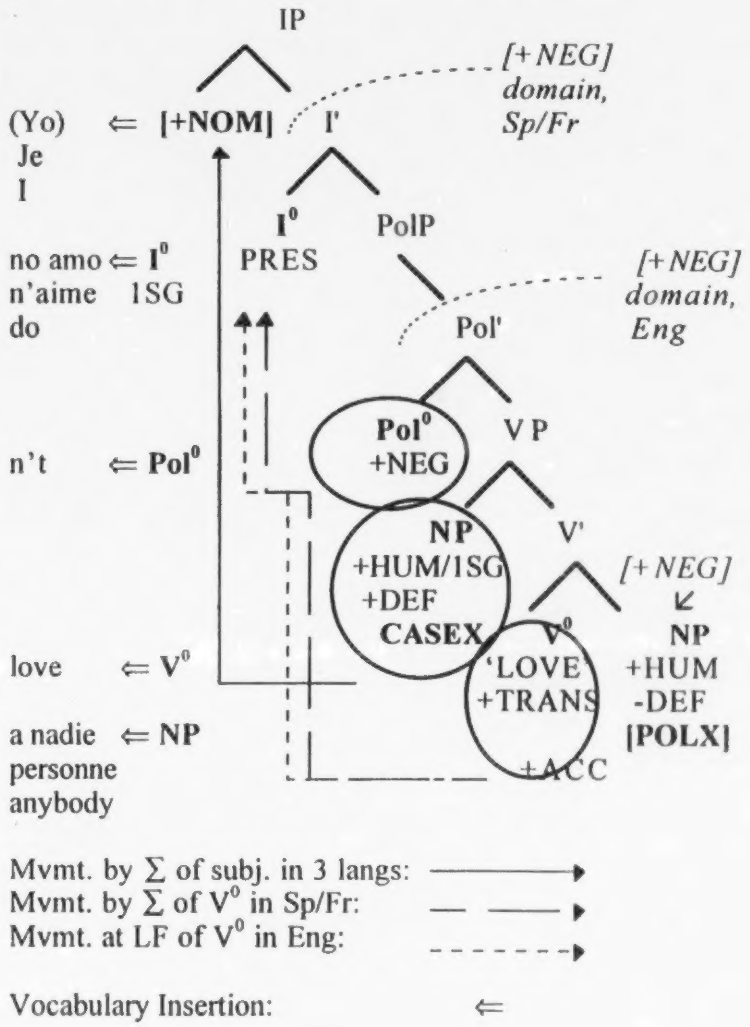
4. Analysis

The analysis that follows first addresses object IPIs in Spanish, French, and English. The second part considers subject IPIs.

4.1. Object IPIs

The structure in (15) represents the sentences containing object IPIs in (1) through (3). As discussed above, this system assumes that the phrase structure by Σ contains only bundles of features, which are not realized phonetically until PF. The tree in (15) shows how the relevant feature bundles are base-generated. The VI/PF realization of the feature bundles by Σ is shown with double arrows to the left of the terminal nodes.

(15) Phrase Structure/Vocabulary Insertion of IPIs in Object Position



In each language, the first person subject pronoun appears as a feature bundle, which is base-generated in [Spec, VP]. The bundle moves to [Spec, IP] by Σ in order to get nominative case. The phonological material for the subject pronouns is inserted at VI. The bundles in the phrase structure by Σ "function as indices that *identify* the Item whose phonological features are inserted into the appropriate terminal node" (Halle & Marantz 1994: 276).

As (15) shows, the underlying structure of sentences (1) through (3) is identical for Spanish, French and English. The only difference by Σ relates to the relative strength of the inflectional features. Both French and Spanish have strong verbal inflection, so the feature bundle in V^0 raises to I^0 by Σ. In English, however, because verbal inflection is weak, the bundle in V^0 does not raise until LF (Pollock 1989).

Since no phonological features are present in the syntax, the semantic features for the verb *love* are indicated with capital letters ('LOVE'). In French and Spanish, the bundle in I^0 is mapped at VI to the phonological content *aime* and *amo*, respectively. For English, the inflectional features are phonetically realized through the insertion of *do* at I^0, and the bundle left in V^0 by Σ is mapped to the phonological content appearing to the left of the terminal node (*love*).

Pol^0 contains the feature [+NEG], as seen in (15). This same feature licenses the IPI in object position. It does so by defining a *negative polarity domain* ([+NEG] domain) that, at least for matrix declaratives, extends to all of the lower phrase structure. Any feature bundles underspecified for polarity *within* the domain assume the value *of* the domain. Therefore, the bundle for the object IPI in all three languages is [+HUM; [-DEF [+NEG]]], and at VI, it surfaces according to the specific morphological and phonological requirements of the particular language.

In French and Spanish, the [+NEG] feature in Pol^0 raises to I^0 with the verb, establishing the [+NEG] domain at that level. The presence of the feature is phonetically realized through VI as the preverbal clitic *ne* in French and *no* in Spanish. Because verb movement does not occur until LF in English, the [+NEG] domain is defined at Pol'. The [+NEG] feature in Pol^0 is realized through VI as the clitic *n't*.

Note also that the object IPI acquires a structural feature for CASE from the verb, [+ACC]. The resulting amalgam leads to the VI/PF realization *a nadie/personne/anybody*. One observation peculiar to Spanish is that it overtly realizes the feature [+HUM] on the object IPI (i.e., *a nadie*). This 'personal' *a* occurs only when [+HUM] is a part of the feature bundle in object position, or stated differently, when the bundle includes [+ACC]. This personal *a* does not appear when a [+HUM, +NOM] IPI occurs, that is, when the IPI is in subject position:

(16) No amo *a nadie*. 'I don't love anybody.'
__*Nadie* duerme. 'Nobody sleeps.'

This difference in the surface form of a [+NEG] IPI bundle within a language is also observed in English, where a [+NEG] IPI surfaces as *nobody* or *nothing* in subject position, but appears as *anybody* or *anything* in object position. In both languages, the structural case features [+NOM] and [+ACC] interact with the base-generated bundle of the IPI. For example, the feature bundle for a [+NEG] subject IPI moves to [Spec, IP] by Σ in order to get case. Because that IPI bundle has become the uppermost element in a [+NEG] domain, the [+NEG] feature it carries must be overtly realized. Thus, in English a [+HUM; [-DEF [+NEG]]] IPI in subject position surfaces as *nobody* rather than *anybody*.

This analysis of object IPIs predicts that the [+NEG] feature will be manifested upon any IPIs in a downward-entailing environment. In other words, all IPIs within a given polarity domain will surface with the same value. This prediction is borne out by evidence in all three languages, and is best illustrated in (19a), which shows that this domain may extend indefinitely:

(17) Spanish (a) No doy nada a nadie.
(b) *No doy *algo a nadie/nada a alguien.*

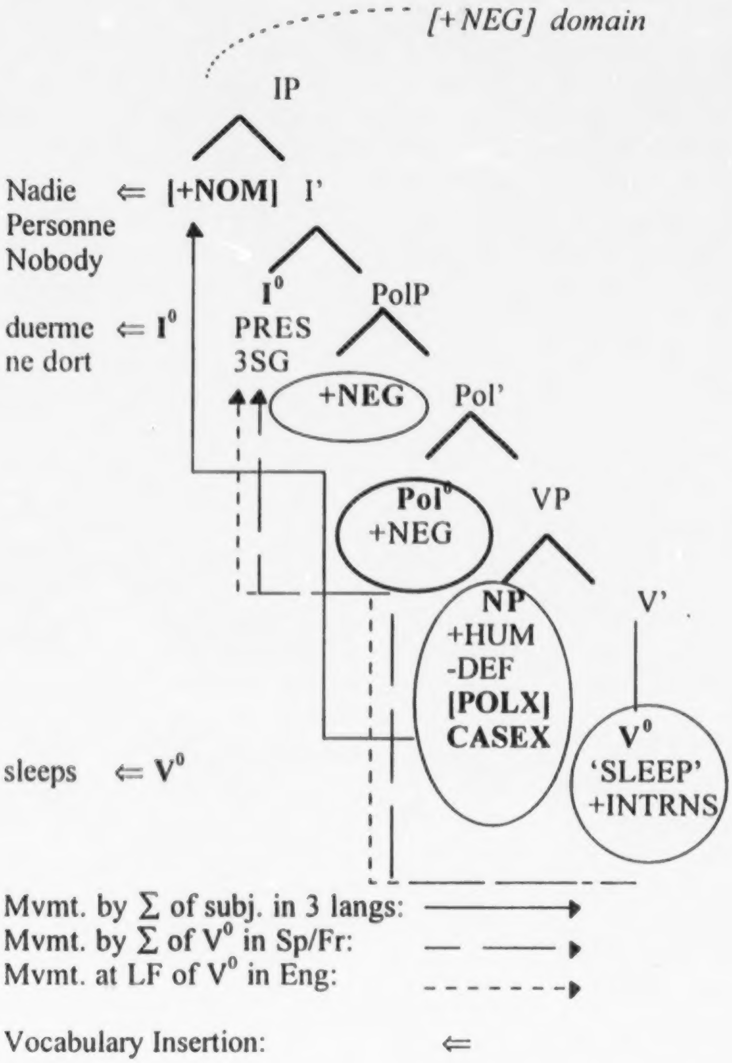
(18) French (a) Je ne donne rien à personne.
(b) *Je ne donne *quelque chose à personne/ rien à quelqu'un.*

(19) English (a) I don't give anything to anybody (at any time for any reason...)
(b) *I don't give *something to anybody/ anything to nobody.*

4.2. Subject IPIs

The analysis for IPIs in subject position (examples (4) through (6) above) follows directly from the previous analysis of objects:

(20) Phrase Structure/Vocabulary Insertion of IPIs in Subject Position



[Spec, VP] contains the same feature bundle for the indefinites that appeared in object position in (15), except for the [+ACC] specification. Because this bundle lacks a feature for case (represented in (20) as the underspecified feature [CASE X]), it then moves through [Spec, PolP] to [Spec, IP] to receive [+NOM]. In doing so, the bundle picks up the [+NEG] feature in [Spec, PolP] and carries it to [Spec, IP]. The [+NEG] domain in this construction, therefore, is at the level of the IP. Again, in Spanish and French, the verb moves prior to LF through Pol^0 to I^0. In French, the feature [+NEG] is phonetically realized as the clitic *ne*, whereas in Spanish, the feature remains phonetically null. In English, the verb does not raise until LF, and the [+NEG] feature in Pol^0 is also phonetically null. This variation is unremarkable; it is simply a language-particular difference as to which features map to phonological content at VI. The surface forms that features take is a morphological, rather than a syntactic, consideration.

Evidence that the [+NEG] domain in (20) comprises the entire matrix clause is provided by sentences such as (21), in which any IPIs in downward entailing environments are consistently, and exclusively, [+NEG]:

(21) Nobody loves *anybody* at *any* time for *any* reason.

5. Conclusion

This analysis of IPIs has several distinct advantages over prior approaches. First, it provides a unified explanation of three languages that taken together had proven problematic. Crucially, those approaches relied on the assumption that morphological surface forms directly reflect syntactic processes. This assumption required extra machinery in order to explain the data.

For example, one account explained the Spanish *nadie*, which appears in both subject and object positions, as two distinct lexical items. Thus, words that are identical on the surface were deemed underlyingly different, one an NPI and the other a universal negative quantifier. Making such a distinction is not necessary under our approach; the two are overt manifestations of identical base-generated feature bundles.

Second, adoption of the DM model allows for a simplified phrase structure in that fewer functional categories are needed. The insight of Zanuttini's original PolP analysis is coupled with an abstract featural analysis that obviates the need for NegP to account for polarity facts.

Finally, divorcing morphology from syntax renders epiphenomenal the distinction between Negative Concord languages and Negative Polarity languages. Instead, the differences between the two types are morphological rather than syntactic.

Once again, working in this model requires more precisely defined pre-VI feature bundles, as well as a detailed account of how these features interact with each other and interact within the phrase structure. We do not claim that the full range of polarity facts can be subsumed under this first pass at a feature-based account. However, we predict that extension of this analysis to other types of polarity constructions, such as adversatives and certain adverbials, will follow with a minimum of additional machinery. We further believe that other closed-class items will be found to adapt fruitfully and easily to this framework, thus simplifying and rendering more flexible the computations involved in the syntactic component of the language module.

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Chanting Intonation in French

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1. Introduction

There is a well-known intonational contour in English which—in the early phonetics literature—was named *calling contour* (Pike 1945), and observed in "calls, often with warning by or to children" (p.71-2). Liberman (1975) used the more generic term *vocative,* and considered the contour as variety of *warning/calling tunes*. In the following example, the tune is associated with a call a parent may utter to call a child home (from Ladd 1978:517):

(1) Alex an-- der--

Ladd (1978) shows that the connection between the contour and its calling function is incidental: the tune is used to signal stereotyped, predictable messages in a variety of contexts. Current studies subscribe to this interpretation. Pierrehumbert and Hirshberg (1989) formulate Ladd's proposal in terms of *shared convention* between the speakers, which applies "even if the convention is a private one between individuals" (299). McLemore (1991) generalizes this claim by showing that the use of phrase-final level tones, in general, is "motivated by the 'givenness' or 'obviousness' of the [discourse] content" (99).

The contour was also described as a type of calling tune in French (Dell 1984). This interpretation was later enlarged to different types of vocatives (Di Cristo to appear). However, the contour seems to appear in a variety of contexts other than vocatives. The following paper shows that it is also a typical pattern in listing and in conversational implicature. Most of these contexts were previously illustrated in the literature. Chanted listing or "paroxytonic enumeration", for instance, was identified by Fónagy and al. (1983:168) as a commonly used intonational 'cliché' in French, and a special 'implicative' contour was introduced among the "Ten basic intonations of French" by Delattre's (1966). This paper's intention is to demonstrate that there is a common pragmatic and formal link between these seemingly different contexts. Just like in English, the common pragmatic element can be derived from the tune's core meaning, which conveys that the utterance's propositional content is 'predictable' from the discourse context. Because of this broader interpretation, the term 'chanting intonation' will be preferred to 'vocative' or 'calling contour', considered as sub-types.

Early descriptions in English emphasized the contour's characteristic 'chanting air', attributed to the tonal interval (about a minor third) between the penultimate high and the lowered, often lengthened, final tone. According to Liberman's (1975) representation, the contour's basic tonal pattern is (L)HM, with the final Mid tone necessarily preceded by a High tone, and only optionally completed by a Low tone, if the word is longer than two syllables. In Pierrehumbert's (1980) two-tone intonational model, the *vocative chant* is represented by a bitonal H*+L pitch accent followed by a downstepping H- intermediate phrase tone and an upstepping L% boundary tone. Ladd (1996) treats the contour as a sequence of H and downstepped !H tones, with no boundary tone.

The contour also has different representations in French: (i) LHM, following Dell (1984), Di Cristo and Hirst (1996), (ii) lh\HH, according to Mertens (1987), and (ii) H* H- L%, as suggested by Jun and Fougeron (1997). Although in the majority of cases, there is no reason to prefer one phonological model to another, it will be shown that seemingly different intonational patterns can be treated as subsets of chanting intonation in a model assuming an H- intermediate phrase tone (Jun and Fougeron 1997).

2. Chanted vocatives

2.1. Contexts of occurrence

Chanting intonation occurs in different types of vocatives in French. It is used when the speaker addresses someone with whom he or she can assume having a shared convention or agreement. The importance of an agreement on the propositional content of the utterance can be indirectly demonstrated by the inappropriateness of the contour in emergency situations where—by definition—a new information has to be transmitted (see Ladd 1978 for English). Compared to the appropriate emergency call 'Fire!' in (2), the call uttered with chanting intonation in (3) is unacceptable:

(2) Au f
e
u !

(3) *Au
feu !

The mutual convention has to be shared by both the speaker and the addressee. In other words, even if the addressee's identity is known to the speaker, only a mutually acknowledged, private convention between the two can license the use of the contour in friendly, chanted greetings like 'Hello!' in (4):

(4) Bon
jour !

In another type of chanted vocative, the speaker addresses someone—most frequently a child—with the intention of warning him or her. Again, in warnings uttered with chanting intonation, the tune conveys the meaning of a 'routine'. This explains why (5) sounds like a complaisant reminding about a potential danger, rather than a serious warning in an emergency situation:

(5) tten
A tion !

The contour's most typical vocative use is found in direct calls (section 2.2.) where the tune aims to "capture the attention of a person in a kindly manner" (Di Cristo to appear). However, there is often no need to utter a word in order to convey the meaning of a chanted call. Di Cristo (opt.c.) points out that the contour's calling function itself is lexicalized: the call in (6) is reminiscent of the cuckoo bird's call in French. As another pattern indicates, this calling function is not only lexicalized, but iconic[1]. Two vowels—[e] and [o]—uttered with chanting intonation are sufficient to represent the meaning of a friendly call in (7] (see Ladd 1996:136 for German):

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[1] The iconicity of the sustained final pitch value—used to reflect spacial distance from the addressee—was argued in studies of English intonation, among others by Liberman (1975) and McLemore (1991).

(6) Cou cou ! (7) Eh oh !

Cou Eh
cou ! oh !

Another iconic use of the chanted vocative emerges in mockery (8), where non-sense syllables can mimic the intonational meaning of a 'teasing' call:

(8)
na
Na nère !

The contour was interpreted as "childish mockery", an intonational 'cliché' based on three tones (Fónagy and al. 1983). Its typical chanting pattern "can be transferred to other utterances with an analogous function" (p.156), and it is not only used by children, but also "occasionally applied by adults" (Di Cristo to appear).

2.2. Formal representation in direct calls

There is currently no unanimously accepted phonological model for French intonation. Since different formal representations seem to equally well account for the chanting contour (section 1.), a systematic study of its tone-to-syllable mapping in words of different length was necessary.

Chanted calls and warnings were elicited from four native female speakers in controlled, read-aloud dialogs. The contexts consisted of voiced target words repeating the same targets embedded in a previous statement (9) (10). French first names *Anne*, *Anna*, *Joanna*, *Marianna* and *Marie-Joanna* were used as target words. Prosodically, each word corresponds to a one- to five-syllable Accentual Phrase (AP) and forms a one-word Intonational Phrase (IP)[2]. First the speakers read the statement, then uttered the following target word with the calling intonation suggested in the statement ("calls sweetly" or "sweetly reminds her or him"). They were presented with one context at a time. Each context was printed on cards, with the target words highlighted. The speakers repeated each reading five times, and were not aware of the expected chanting intonation.

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[2] The terminology is of Jun and Fougeron (1995), but AP and IP correspond to Di Cristo and Hirst's (1996) *tonal unit (UT)* and *intonational unit (UI)*, and to Mertens's (1987) *accentual group (AG)* and *intonational group (GI)*, respectively.

(9) Chanted call (translated example):
A, the aunt, is taking Joanna, her niece, out.
She can not see her, so she calls sweetly:
A: Joanna!

(10) Chanted warning (translated example):
A, the father, biking with Marianna, his daughter,
sweetly reminds her again to pay attention:
A: Marianna!

As shown in (11), the majority of the speakers produced, at least once[3], chanting intonation on three-, four- and five-syllable words. Fewer occurrences were observed in the two-syllable word *Anna*, and none of the four speakers produced the contour in the one-syllable word *Anne*. With one exception in *Anna*, chanting intonation only occurred in calling contexts. The speakers—at least in this experiment—preferred to use falling intonation with gradient differences to convey the meaning of a friendly warning or reminding.

When produced, the contour was aligned with the right edge of the phrase, showing an F0 peak followed by a somewhat lower, 'midish' plateau. In words longer than two syllables, these were preceded by a low plateau. If the contour is represented as L, H and M (Dell 1984, Di Cristo and Hirst 1996) or l, h \HH (Mertens 1987) tones, the F0 peak and the final plateau are associated with the penultimate H (h) and the final **M** or \HH syllables, respectively. Depending on the length of the word, L is realized on the first one to three syllables. Jun and Fougeron (1997) suggest the representation: H* H- L%. H* is AP (accentual phrase) final tone which is realized—in this particular contour—on the penultimate syllable. H- is the ip (intermediate phrase) tone and L% is the IP (intonational phrase) tone. In these words, the H- and L% are both realized on the final syllable of the word. As already exemplified in English intonation (Pierrehumbert 1980), the sequence of H- L%

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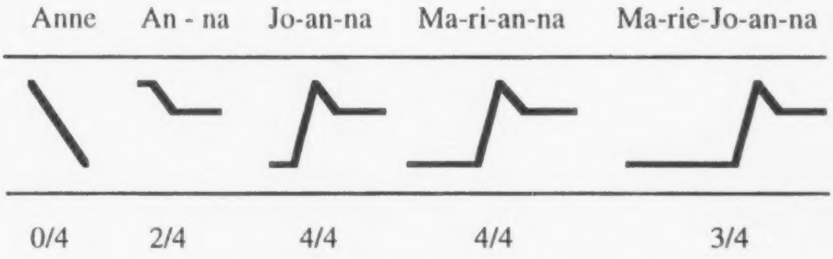
[3] Occurrences in this corpus are not indications about occurrences in spontaneous discourse contexts.

surfaces phonetically as a mid tone. Initial high tones ('accent initial') were not realized at the beginning of phrases longer than two syllables, which accounts for the low plateau at the beginning of the word. This representation requires a H* realization rule: H* (of the IP final AP) is realized on the penultimate syllable of the phrase, when ip and IP have different types of tones, both realized on the same syllable.

(11)



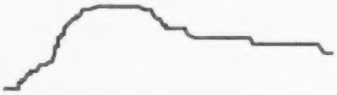
In this experiment, designed to spontaneously elicit "sweetly" calling and warning intonations, the speakers assumed they had to produce a variety of such patterns. Chanting contour was one of them, except for the word *Anne*. However, there is evidence that the contour also occurs in one-syllable words. The utterance in (12) was pronounced by one of the author's friends living in a Parisian suburb. She explained that it is a recurrent, usual calling pattern in the family, typically uttered when calling a child—*Aude*—from the upper level of the house (Morel, p.c.). As (12) indicates, in French—just like in English—the contour's minimal tonal configuration is a peak followed by a somewhat lowered plateau: HM, h\HH or H-L%. The only syllable of the word in (12) splits into two in order to provide 'enough room' for these two tones:

(12) Au-- --aude !

2.3. Formal representation of compound vocatives

In the previous examples, the chanting contour was applied to single words representing a one-word unit on each prosodic level[4]. However, the contour can also stretch over longer units. Following Jun and Fougeron (1997), the compound vocative in (13) is formed by three words corresponding to two accentual phrases (AP), one intermediate phrase (ip) and one intonational phrase (IP).

(13)



Bon jour Ma dame Durand !
L H* -H- L%

Fónagy and al. (1983) describe this contour as an intonational 'cliché' which is only distinguished from the childish mockery (section 2.1.) by its different tonal intervals; their basic tonal configurations seem similar. This claim can be supported by assuming that the tune has the same (L) H* H- L% underlying representation as simple vocatives analyzed before. As the schematized pitch track in (13) indicates, the first syllable of *Bonjour* is phonetically realized as a Low tone. The following, primary stressed syllable (*jour*) is the highest F0 peak in the utterance, represented as H* AP final tone. The phonetically 'midish' plateau stretching over the next four syllables corresponds to the sequence of H- (ip) and L% (IP) tones. H- is spreading from the first syllable of the word *Madame* to the penultimate syllable (*Du*) of IP, while L% is realized on the final syllable (*rand*) of the phrase. Pitch accents between H* and L% are not realized. While other intonational models might have to use surface representations to account for the plateau, a model based on three levels of prosodic structure has the advantage of capturing the phenomenon phonologically, by using the rightward spreading properties of the floating H- tone. Ladd (1996) suggests a very similar representation for some of his examples in French.

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[4] There are two levels according to Dell (1984), Mertens (1987), Di Cristo and Hirst (1996), and three following Jun and Fougeron (1997).

Unlike in simple vocatives where H* was switched to the penultimate syllable of the phrase, in this example H* aligns with the final, primary stressed syllable (*jour*) of the first AP. Notice, however, that the same sentence with the same meaning can be uttered with a peak placed at the beginning of the phrase. Although more analysis is needed yet, this variability indicates that the representation of H may be at a level higher than AP. This difference might also account for the perception of the two contours as separate 'clichés' in the literature.

3. Chanted listings

The contour previously studied in chanted vocatives, and their iconic manifestations, also occurs in listings when the listed items are not meant to be individually informative. In instructions of how to cook a pound cake, for instance, an informative list (14) would use rising intonation in French:

(14) Il te faut des oeufs du beurre de la fa rine...

('You need eggs, butter, flour...')

If the list does not represent a new information for the addressee who is, let's say, an excellent cook, the speaker would utter the list with chanting intonation (15), which would then convey the contour's typical core meaning: an established and mutually shared routine:

(15) Il te faut des oeufs du beurre de la fa rine...

('[You know...] you need eggs, butter, flour...')

Similar difference is found between rise (L* H-) and high-rise (H* H-) intonations in English (see Beckman and Ayers 1994).

As demonstrated earlier, the typical licensing condition of the contour's use in vocatives is a private, shared convention between the speakers. In listings, however, the shared convention is of different type. The chanted listing in (16) was a uttered in a formal, face-to-face radio interview[5] by a literary criticist who argues that contemporary French literature lacks of 'great writers': "when he was a teenager (**1**.), [...] there was Proust [...] (**2**.), and "there were people like Gide, Claudel, Valéry, Malraux" (**3**.-**4**.)." The last four writers' names are uttered with chanting intonation:

(16) **1.** "Il n'y a plus de grands écrivains [...] Moi
2. quand j'étais adolescent [...] il y avait Proust
3. [...] il y avait des
comme Clau lé Mal x
4. Gide, del, ry, u
gens Va ra

In this context, the type of convention between the speaker and the addressee is socio-cultural. It identifies both of them as educated members of the same linguistic community, and as such, having the same socio-cultural background. Based on this common ground, the speaker assumes that the names listed as 'great writers' represent a routine information for the addressee. This assumption licenses the use of the chanted contour, conveying—once again—its core meaning of 'stereotype' and 'predictability'.

This contour—considered by Fónagy and al. (1983) as a separate intonational 'cliché'—has the same underlying tonal configuration as simple chanted vocatives (section 2.1.). As shown in the pitch track of (16) (see Appendix), the utterance can be divided in four intermediate phrases (ip), each ending with a writer's name. Following Jun and Fougeron (1997), the first three phrases can be represented as H* switched to the penultimate of each phrase, followed by H- and L% on the final syllable surfacing as the lengthened, final mid plateau. Instead of a plateau, the last phrase (*Malraux*) shows a continuation rise that indicates informative content to come.

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[5] Special thanks to P. Mertens who provided the sound tracks for the analysis of this utterance extracted from his corpus (Mertens 1987).

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4. Implicature

The contour's use in implicative utterances is also based on a non-private convention between the speakers. But unlike in listing, in implicature the mutually shared convention has to be derived from the context. In implicature, the 'givenness' of information is to be taken literally as 'already present or given in the discourse context'. The utterance where the contour occurs (**3**.) refers to previous turns of the conversation in which the speaker claimed that she—coming from a wealthy family—became a journalist instead of getting married, because of objective circumstances in her life: war, loss of her father...etc. Chanting intonation in **3**. signals that the addressee has to go back to these previous parts of the conversation to infer that the speaker used the argument of age in **1**.-**2**. as just another example of "objective circumstances". The anaphoric use of the determinant *les* in **3**. also supports this interpretation.

(17) **1.** "Mais j'avais 14 ans, eh ben j'ai choisi de
2. travailler # Alors, il y a
3. tout de même les circonstances ob jec tives!"

The tone-to-syllable association (see pitch track in Appendix) matches the tonal configuration observed in simple vocatives: H* is realized on the penultimate syllable of the phrase, and it is followed by H- and L%, both realized on the final syllable[6].

Phrase-final chanted contours seem to have turn-yielding function in French conversations. Examples similar to (17) suggest that the speaker yields the turn in order to make sure that the other was able to link the statement to the preceding context. This interpretation is consistent with native listeners' suggestion that such utterances "sound like asking for confirmation". Therefore, it is not surprizing to observe that the contour might function as yes/no question, and elicit direct answers from the addressee. In (18), **B** interprets **A**'s chanting intonation (**2**.) as a direct invitation to take the turn, and to specify that she (**B**) did not "directly worked" with the famous movie director Jean Renoir (*lui*, 'him'), but only "collaborated" (**3**.) with him.

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[6] This analysis differs from illustrations of the implicative contour in previous studies (see Fagyal 1997).

(18) **1. A**: Parce que vous avez travaillé
2. directement $_{\text{a}}$$^{\text{vec}}$ lui
3. B: Oui, c'est a dire que j'ai collaboré avec
4. Renoir...

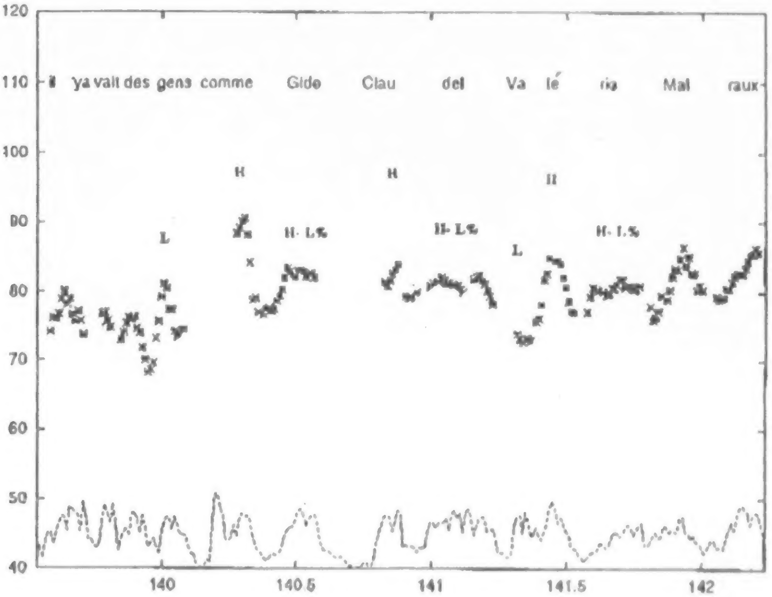
Clearly, such interactive use of the chanting contour in phrase-final position differs from the uses of phrase-final level intonation in English. McLemore (1991) observes that, except for direct calls, "phrase-final level intonation [...] marks continuation within text, and it doesn't elicit a response" (p.96). Therefore, in English the speaker does not expect—and does not get—backchannel cues while using the contour at phrase boundaries. The opposite seems to be true in French. By using chanted intonation in phrase-final position, the speaker seems to yield the floor to the addressee for comments on the instantiated proposition. This means that, in terms of tonal meaning, there is a potential contradiction between the tune's core meaning (signaling the 'obviousness' of the propositional content) and its pragmatic implementation (eliciting confirmation from the addressee). Possible solutions of this paradox might come from a compositional interpretation of the contour's meaning (see Fagyal 1997).

5. Conclusion

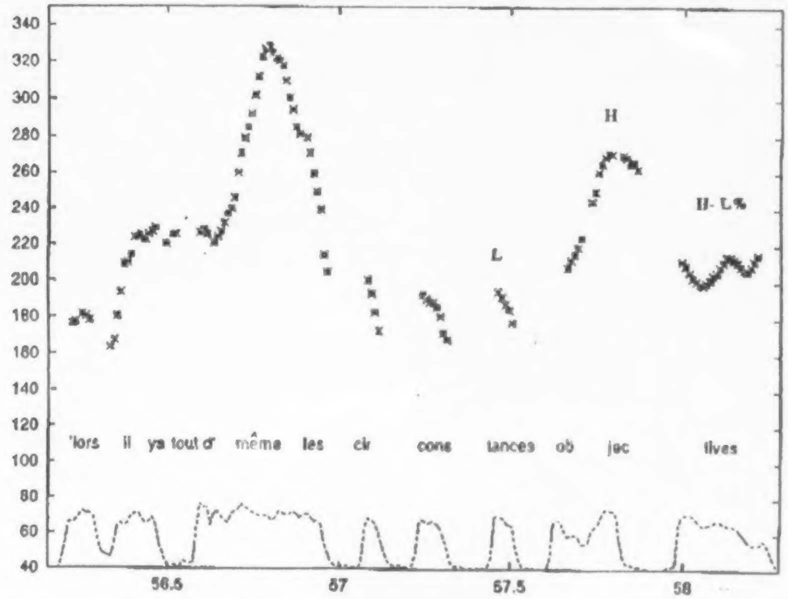
This paper showed that chanting intonation is also a widely used intonational contour in French. As suggested in the literature, the contour's most typical function is related to calling. The tune emerges in a variety of vocatives, such as simple and compound calls, greetings, warnings and remindings. Its calling function is iconic in simple calls and childish mockery. Listing and implicative utterances also occur with chanting intonation. In all contexts, the common element is the tune's core meaning: the propositional content of the utterance over which the contour is displayed is somehow 'stereotyped', 'given' or 'predictable' from the discourse context. The paper also argued for a possible formal link between these seemingly different intonational patterns. All contours presented were treated as subsets of chanting intonation, following a model which assumes an intermediate phrase level in French (Jun and Fougeron 1997).

By comparing contextual meanings and formal representations of the chanting contour in French and in English, this work points toward the tune's universal and language specific properties.

Appendix



Example (16): Chanted listing (see section 3.) "Il y avait des gens comme Gide, Claudel, Valéry, Malraux..."



Example (17): Chanted implicature (see section 4.) "Alors il y a tout de même les conditions objectives!"

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Sui Generis Genericity

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1. Introduction

There are various opinions about how the phenomenon of sentential genericity (Carlson and Pelletier 1995) is related to other classes of expressions of natural language. The notion of 'genericity' is most commonly viewed as having close ties to tense, mood and aspect (cf. Dahl 1985; Comrie 1985). For instance, philosophers and occasionally linguists (e.g. Dahl 1975, 1985, and 1995) make use of the term 'generic tense', thereby implying that genericity is a member of the tense system of a language. Less commonly, genericity is thought to reside among the system of modals. (There also have been other proposals, for instance, Farkas and Sugioka (1983) situate genericity in the system of frequency adverbs.) However, the most widespread claim is that genericity is a part of the aspectual system of natural language (cf. Comrie 1976:26ff., 1985:40). The very proliferation of existing claims indicates that genericity is at best an uncertainly classifiable phenomenon. In this paper, however, we argue that sentential genericity is a category in its own right, rather than just a member of some other category system. The main focus of this paper is the delimitation of genericity from aspect.

Let us first clarify what 'genericity' is, and what it means to be a 'member of a category system'. The latter notion, a stock concept of linguistics, is standardly taken to mean that formal expressions are in complementary distribution with other members of the same category, syntactically and morphologically, and, furthermore, semantically. For instance, we take present and past tenses in English to be members of the same category, because they do not co-occur on the same verb, the formal expression of one precludes the expression of the other, and in certain constructions (e.g., infinitives) neither can be expressed morphologically. On the other hand, the English progressive aspect and tense are not members of the same category, because the progressive may co-occur with any tense, may appear in places precluding tense, and the expression of progressiveness is semantically independent of the expression of tense in that both may independently contribute to the sentential semantics. These are the simple cases, at least.

The notion of 'genericity' is more complex and extensively discussed in Carlson (1977, 1989), Carlson and Pelletier (1995). But we basically characterize a generic sentence as follows: "Notionally, a generic sentence is one expressing a regularity, as opposed to an instance from which one infers a regularity. For example, the generalization *The sun rises in the east* expresses a regularity, while *The sun rose this morning in the east* expresses an instance from which, along with other such instances, one infers a regularity" (Carlson 1989:167). Further, "[g]eneric sentences...are (i) stative sentences (ii) based on lexically non-stative predicates and (iii) they are intensional and (by all appearances) non-monotonic" (Carlson 1989:168). The most intriguing and the least understood property of generic sentences is their intensionality and non-monotonicity. They express "...'principled' generalizations over the entities of a class, and do not capture mere 'accidental' facts about them" (Krifka et al. 1995:44), while at the same time they allow for 'exceptions' or 'counterexamples' (unlike universally quantified sentences). Crucially, genericity does not involve only quantity, and hence must be distinguished from iteration or repetition, from a pure multiplicity of events, but it depends on what counts as 'normal', 'typical', 'characteristic'. Sentential constructions referred to in the literature as 'habitual', 'habituative', 'characteristic', and the like, all express *sentential genericity* and contain some generic operator that is directly applied to or tightly related to the verb.

According to Dahl (1985:99-100), "[t]he most frequent case is for generic sentences to be expressed with the most unmarked TMA [tense, mood, and aspect, HF&GC] category". However, there are many languages which exhibit formally marked expressions of genericity (e.g., Guarani, Georgian, Kammu, Czech, Akan, Wolof, to take just a few languages mentioned in Dahl 1985). In assessing the question, then, of whether genericity is a part of the system of aspect or another system, we examine largely new data from Slavic and several non-Indo-European language families involving overt generic markers. There are three cross-linguistic databases we draw upon: Dahl's (1985) data based on questionnaires, Carlson's unpublished but more extensive survey of data drawn from reference grammars, and Filip's work on genericity in Czech (1994).

We begin with a discussion of the relationship between genericity and tense. We will give several arguments for the formal and semantic independence of genericity from tense. Then we will show that the same arguments apply to the relationship between genericity and aspect. To the extent that one subscribes to the validity of the arguments for the independence of genericity and tense given in this section, one should also accept the validity of parallel arguments in the case of genericity and aspect. From this we will conclude that genericity is not a member of either the tense or aspect category.

2. Genericity vs. Tense

To view genericity as a part of a tense system is plausible because, for instance, in English the simple present tense of "dynamic" episodic predicates selects for generic readings, as illustrated in (1):

(1) a.?? John writes a poem / *John smokes a cigarette
b. John writes poems / John smokes cigarettes

Moreover, in many languages the expression of genericity is conflated with tense marking. For instance, the English past generic *used to* conflates genericity and past tense.

However, it is easy to show that genericity and tense are not members of the same category. Consider first a notional argument. Tense is a deictic category, it is a "grammaticalisation of location in time" (cf. Comrie 1985:1), while genericity is clearly a non-deictic category. "Epistemologically, a generic sentence is one expressing a truth (or falsehood) the true value of which cannot, in general, be ascertained solely with reference to any particular localized time. For instance, the present tense sentence *Dogs bark* is true, even though at the present time there may be no dogs barking" (Carlson 1989:167). Genericity and tense seem to fulfill quite different semantic roles.

Second, generic interpretation is not dependent upon tense in any sense. Generic sentences can be in any tense, as so-called "timeless" generic sentences may contain verb forms in any tense. This is shown in the following English examples:

(2) a. Corruption starts at the top
b. Men were deceivers ever
c. The poet will go to any end to make a rhyme

Third, and related to this, genericity is semantically independent of tense, in that both independently contribute to the sentential semantics. As Dahl (1975; 1985:100), among others, points out, "a law or lawlike statement may be restricted in time, and this time may well be in the past or in the future." This point is illustrated by examples in (3):

(3) a. Dinosaurs (usually) ate kelp
b. The current President eats broccoli
c. Starting next Monday, this office will be open only from 2pm to 4pm

Fourth, generic markers, that is, markers restricted to only generic contexts, are *formally* independent of overt tense markers, as overt generic and tense markers freely co-occur. As a case in point let's look at the Slavic generic marker *-va-*. We use *-va-* as a cover term for the variety of allomorphs in which this suffix is realized in actual verb forms. The generic suffix *-va-* has two crucial properties: it attaches to imperfective verbs, and it creates an unambiguously generic interpretation for a whole sentence. To illustrate the use of this suffix, we use examples from Czech. In contrast to other Slavic languages, such as Russian, (cf. Kuçcera 1981:177; Petr 1986), in Czech the suffix *-va-* is used very productively in all styles of speech. Table 1 illustrates the derivation of inherently generic verbs with *-va-* in Czech:

Table 1: Derivation of generic verbs in Czech

imperf. simplex	**→**	**derived *generic* imperf.**
hrá-t	→	hrá-VA-t
play-INF		play-HAB-INF
'to play'		approximately: 'to tend to play',
'to be playing'		'to have the habit of playing'

From *hrát* 'to play', 'to be playing' we get the habitual verb *hrávat* meaning something like 'to play usually, often, sporadically, habitually' or 'to tend to play'. Both *hrát* and *hrávat* are imperfective.

Now, to return to the point at hand, the generic suffix may freely co-occur with any tense, PAST, PRESENT or FUTURE, as illustrated in (4):

(4) a. Karel hrá-va-l hokej
Charles play-HAB-PAST hockey
'Charles used to play hockey' [remote past]

b. Karel hrá-vá hokej
Charles play-HAB.PRES hockey
'Charles usually plays hockey'

c. Karel bude hrá-va-t hokej
Charles AUX.FUT.3SG play-HAB-INF hockey
'Charles will usually play hockey'

Notice that in Czech the combination of the generic with the past tense marker amounts to 'remote past' reference, as (4a) illustrates. In many languages we can find affinities between genericity and temporal distance with respect to the time of the utterance, that is, generic markers combined with tense markers often entail relative remoteness from or closeness to the time of utterance. What exactly gives rise to such affinities is still an open question. (For a preliminary discussion of Czech data see Kuçcera 1981; Filip 1994).

Fifth, we also see that generic interpretations and forms are compatible with constructions precluding the expression of tense (e.g., non-finite forms such as infinitives, gerunds, imperatives). This is shown in the English example (5), semantically, and in the Czech examples in (6) which show *-va-* formally co-occurring with infinitival and imperative markers:

(5) a. To know him is to love him
b. Attending class (i.e., regularly) is very important

(6) a. Jídá-vá-t kaviár - to by se Ti chtělo!
eat-HAB-INF caviar - it COND REFL you wanted
'To eat caviar—surely, that would be nice for you, wouldn't it!'

b. Nesedá-vej pořád v koutě!
NEG.sit-HAB.IMP always in corner
'Don't constantly/always sit in the corner!'

Finally, further disconnecting any linkage between tense and genericity is the fact that there are tenseless languages that have specific generic markers, such as American Sign Language.

Moreover, other tenseless languages, such as Chinese, Burmese and Dyirbal, for instance, convey generic statements by other means. For example, in Dyirbal and Burmese genericity is conveyed by means of a modal distinction between realis and irrealis—in Burmese realis and in Dyirbal irrealis convey present habitual (cf. Comrie 1985:51).

To summarize the points made so far, we have argued that tense and genericity are independent of one another and that genericity is not a part of the tense system of natural language. Another way of expressing this is to note that all the possible combinations in the domain of formal expression of genericity and tense are attested, as seen in table 2:

Table 2: Genericity and tense markers

[+genericity,	+tense]	Czech
[+ genericity,	-tense]	American Sign Language
[– genericity,	+tense]	English
[– genericity,	-tense]	Chinese

In the next section we will turn to the question of the relation between genericity and aspect. We will show that there is no more reason to assume that genericity is a part of the aspect system than there is to assume that genericity is a part of the tense system.

3. Genericity vs. Aspect

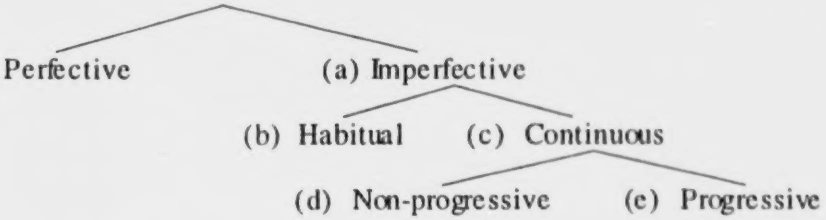
We agree with Comrie's conclusion that genericity is not a part of the tense category (Comrie 1985:40). However, we would like to take issue with the rest of Comrie's conclusion: "In part, this is definitional, a decision not to call habituality a tense, but there is also empirical content to the claim, namely that grammatical expression of habituality will always be integrated into the aspectual or modal system of a language rather than into its tense system" (Comrie 1985:40). Comrie's position is by no means unusual, rather it is the prevalent opinion in the current research on genericity and related issues. We choose Comrie's formulation, because it succinctly and better than any other similar formulations characterizes the position which we would like to dispute.

In evaluating the claim that genericity is a part of the aspect category, we first clarify what 'aspect' is. It is currently used in two different, but related, ways. One of them concerns the 'perfective-imperfective' distinction, or 'grammatical aspect'. In this sense, it is mainly used for the expression of aspect by means of inflectional morphology, as in the English 'progressive/non-progressive' distinction: *John was recovering* vs. *John recovered.* The term 'aspect' is also understood in the sense of the 'telic-atelic' distinction, 'lexical aspect', 'aspectual class' (Dowty 1979), 'situation type' (Smith 1991), 'Aktionsart', or 'eventuality type' (Bach 1981, 1986; Parsons 1990). This view of aspect originated in the classification of verb meanings in philosophy (cf. Ryle 1949; Kenny 1963, Vendler 1957, 1967) and it was introduced into modern linguistics by Dowty (1972, 1979).

There are, accordingly, two different views on the relation between 'grammatical' and 'lexical' aspect. A 'two-component theory of aspect' (the term was coined by Smith, 1995) assumes that the 'grammatical' and 'lexical' aspect are separate categories whose members interact in systematic and predictable ways (cf. Comrie 1976, 1985; Dowty 1977, 1979; Dahl 1981, 1985; Smith 1991, 1995; Filip 1993; Depraetere 1995). In contrast, what may be dubbed a 'one-component theory of aspect' assumes that there need be drawn no, or no strict line, between the 'grammatical' and 'lexical' aspect (cf. Bennett 1981; Vlach 1981; Kamp and Rohrer 1983; Hinrichs 1985; Krifka 1986, 1992; Parsons 1990).

For our present discussion of genericity we need not settle the thorny issues related to the delimitation of the category 'aspect'. However, to avoid any possible confusion, we mainly focus on the claim that genericity is a part of the aspect category in the sense of 'grammatical aspect', a view that is best expressed in Comrie (1976). According to Comrie (1976:25), genericity, his "habituality", is just one of the categories that are subsumed under "a single unified concept" imperfectivity, this is shown in table 3, taken from Comrie (1976:25).

Table 3: Classification of aspectual oppositions
(Comrie, 1976:25)



(a) Je me baignais (imparfait) dans la mer (French)
'I (usually) swam/was swimming in the ocean'

(b) Quand j'y habitais, je me baignais (imparfait)
/*baignai (passé simple) dans la mer (French)
'When I lived there, I used to swim in the ocean'

Mary used to play the piano
the generic suffix -va- in Slavic languages

(c) ?

(d) Sandy fed the cat (every day)

(e) Sandy was feeding the cat (every day)

The main reason why Comrie (1976:25ff.) includes habituality as a special case of imperfectivity is that, as he notes, imperfective markers are often compatible with a generic interpretation. He states that "a large number of languages (...) have a single category to express imperfectivity as a whole, irrespective of such subdivisions as habituality and continuousness" (Comrie 1976:26). Comrie cites French, Russian, Bulgarian, Modern Greek, and Georgian as relevant examples. However, we arrive at a very different conclusion than Comrie does if we take into account the whole range of the formal means of expressing genericity and how generic markers interact with morphemes specifically dedicated to the expression of aspect. We will show that there are a number of problems with the view of genericity as a subclass of imperfectivity and that such a view must be rejected.

First, not only general imperfective forms, but also perfective verb forms can freely be used, and are often used, for the expression of generic statements. Consider the following examples from Czech (7) and Russian (8):

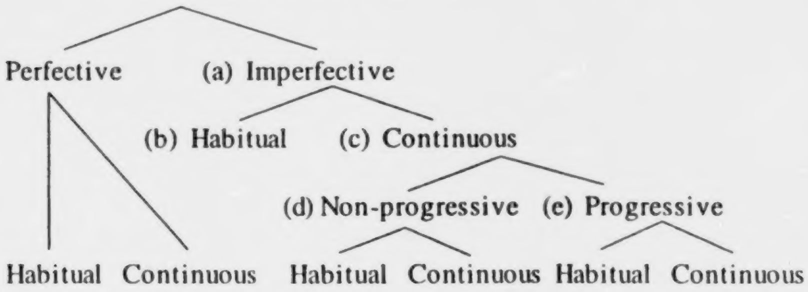
(7) Kdykoli tam přijdu^P, nabídnou^P mi slivovici
whenever there come.1SG, offer.3PL. me plum.brandy
'Whenever I visit there, they offer me plum brandy'

(8) If you don't understand (poymete^P) my explanation, I can always repeat it for you. I'll repeat (povtor'u^P) it for you any time.

(The perfective aspect of a verb form is indicated by the superscript 'P'. The Russian example is taken from Rassudova (1984:16ff.), reported in Binnick (1991:155)). Given that habituality is one of the contextually determined uses that perfective verb forms can assume, it follows that perfectivity should include habituality as a special case, as well, which would mean that aspect and habituality merely cross-classify.

Second, if the general imperfective category includes as a special case 'habituality', because it can be used in habitual statements, then other subdivisions of the imperfective, in particular, the progressive and non-progressive, should also include 'habituality' as a special case, because they can also be used in habitual statements. (See examples (d)–(e) below table 3.) This observation, along with the observation that perfective forms can be used in generic statements, would then lead us to the following revision of Comrie's chart:

Table 4: Revision of Comrie's (1976:25) table 'Classification of aspectual oppositions'



Such a revision of Comrie's original chart clearly shows that (i) habituality and aspect, perfective and imperfective, are notionally orthogonal to each other, and hence independent of each other, and (ii) that habituality is independent of the imperfective and its subcategories.

Third, we also draw a different conclusion from the co-occurrence restrictions among the categories that Comrie subsumes under 'imperfectivity'. As it has been emphasized, we take the question of which, if any, "system" genericity belongs to as a formal claim, that is, we examine the properties of specifically generic markers, which are expressed as *function morphemes within the same verb*. We believe that this strategy gives us clearer and more reliable insights into the nature of genericity. Comrie's

(1976, table I, p. 25) 'classification of aspectual oppositions' appears to be a classification of notional and formal categories. For example, the category 'habitual' covers the explicit markers of genericity and the habitual uses of general imperfective verb forms. Moreover, the category 'continuous', the unmarked member in the opposition 'habitual vs. continuous', is characterized in purely negative notional terms in opposition to 'habituality' as "imperfectivity not determined by habituality" (Comrie 1976:34) and as having 'progressivity' as one of its subdivisions. As far as we can tell, there do not seem to be imperfective forms (with or without explicit markers of 'continuousness') that exclude the habitual meaning or are not determined by habituality, while at the same time allowing for a progressive or a non-progressive interpretation (this is indicated with "?" in table 3). Notice that in languages that have explicit generic markers, the corresponding unmarked form is the general imperfective form, which can be used in generic statements and in statements denoting on-going events. This situation can be found in Czech, for example, which will be described in the next few paragraphs.

The most compelling argument against regarding genericity as a subcategory of imperfectivity is the observation that in those languages that have specific markers for both the genericity and imperfectivity, these two types of markers do not stand in paradigmatic alternation; rather they may freely co-occur in a single verb form. Let us return to consideration of the Czech *-va-*, first examining the examples in (9).

(9) a. Karel hrál *v tom okamžiku / obyčejně* hokej
Charles play.PAST at that moment / usually hockey
'Charles was playing right then hockey' /
'Charles usually played hockey'

(9) b. Karel hrá-va-l **v tom okamžiku / obyčejně* hokej
Charles play-HAB-PAST *at that moment /usually hockey
'Charles usually played hockey'

Simple imperfective verbs, such as *hrál* in (9a), are not intrinsically generic, that is, they are not sufficient for the expression of generalizations over episodic situations or characterizing properties of objects. They can be used in sentences that denote particular on-going situations, here emphasized with the time-point adverbial *v tom okamžiku* 'then/at that moment', or in sentences that denote generic statements, here indicated with the generic adverbial phrase *obyčejne* 'usually'. The addition of the generic suffix *-va-* in (9b) makes the generic reading mandatory. Notice that generic sentences, such as (9b), cannot report particular events, and therefore they are incompatible with any specification of time that denotes a specific reference point.

In Slavic languages some imperfective forms are overtly marked by the suffix *-va-*, which is homonymous with the generic suffix *-va-*. However, the two suffixes can be clearly distinguished from each other. For instance, only the generic suffix *-va-*, but not the imperfectivizing suffix *-va-*, may be reduplicated for emphasis.

(10)	simplex V_i →	derived generic V_i →	reduplicated V_i
	psá-t →	psá-va-t →	psá-vá-va-t
	write-INF	write-HAB-INF	write-HAB-HAB-INF
	'to write'	'to write habit.'	'to write habit.
	'to be writing'		(emphatic)

But more importantly, the two homonymous suffixes, the generic and imperfective one, attach to different bases. The generic suffix *-va-* can be only attached to imperfective verbs, while the imperfective suffix *-va-* attaches only to perfective verbs, and imperfectivizes them. To illustrate the use of the imperfective suffix *-va-*, take, for example, the imperfective verb *zapisovat* 'to note', 'to record'; 'to be noting', 'to be recording' that is derived from the perfective verb *zapsat* 'to note', 'to record'. The perfective verb *zapsat* and the secondary imperfective verb *zapisovat* derived from it differ only in aspect (they build what is traditionally called "an aspectual pair"). This is shown in table 5:

Table 5: Derivation of prefixed perfective and suffixed secondary imperfective verbs in Czech (following Comrie, 1976:90)

simple V_i	psát 'to write'	
	↓	↓
prefixed V_p	na-psa-t	za-psa-t 'to record'
	PREF-write-INF	PREF-write-INF
	↓	↓
secondary V_i	*	za-piso-va-t
		PREF-write-IPF-INF

The suffix *-va-* in secondary imperfective verbs, such as *zapisovat* 'to note', 'to record'; 'to be noting', 'to be recording', cannot be the generic suffix, because secondary imperfective verbs are not intrinsically generic. In this respect they behave just like simple imperfective verbs (see example (9a) above). They can be used in sentences that denote particular on-going situations and in generic statements, as is shown in (11).

(11) Zapiso-va-l *zrovna* */ obyčejně* výsledky
PREF.write-IPF-PAST at that moment / usually results.PL.ACC
'He was right at that moment recording the results' /
'He usually recorded the results'

In fact, secondary imperfective verbs like *zapisovat* behave so much like simple imperfective verbs that they may also take the generic suffix *-va-*. This derivational pattern is shown in table 6.

Table 6: Derivation of generics from secondary imperfective verbs

secondary V_i	→	**derived generic V_i**
za-piso-VA-t	→	za-piso-vá-VA-t
PREF-write-IPF-INF		PREF-write- IPF-HAB-INF
'to note', 'to record'; 'to be noting', 'to be recording'		'to tend to record, note'

From *zapisovat* 'to write down' we can derive *zapisovávat* with the generic meaning that contains both the imperfectivizing and generic suffixes. *Zapisovávat* is inherently generic, and (12) shows that it is incompatible with time-point adverbials, such as *zrovna* 'right then, at that moment':

(12) Zapiso-vá-va-l **zrovna* */obyčejně* výsledky
PREF.write-IPF-HAB-PAST at that moment /usually results.PL.ACC
'He usually recorded the results'

To summarize, the above Czech examples clearly show that genericity is formally and semantically independent of imperfective aspect. The generic and imperfective markers cannot be taken to be formal members of one and the same category, because they co-occur within the same verb form, that is, the formal expression of one does not preclude the expression of the other. Moreover, the generic and imperfective marker each make an independent contribution to the sentential semantics, hence they are semantically independent of each other.

One possible counterargument against this conclusion would be the following one: The fact that explicit markers of imperfectivity co-occur with explicit markers of genericity within the same verb form can be explained by arguing that forms with generic markers correspond to part of the meaning of imperfectivity (cf. Comrie 1967: 24-5). The problem with this counterargument is that in order for it to be valid, we would also expect to find imperfective markers to co-occur *within the same verb form* with explicit markers of progressivity, and to find generic markers on continuous categories, and non-progresse ones (n.b.: as opposed to generic interpretations). This does not seem to be the case, at least to our knowledge. (Of course, there are *periphrastic progressive forms* that involve the imperfective and progressive markers, as in the Italian example *Gianni stava cantando, quando la polizia è arrivata* 'John was singing, when the police arrived' (Italian). This form is optional, as the general imperfective form, *Gianni cantava,* does not exclude the progressive use.)

We believe that the situation in Czech, and other Slavic languages, is indicative of a much wider pattern that holds for generic markers in other languages of the world. There are many languages with generic markers which, like Czech, allow for co-occurrences with imperfective morphemes, and, in some cases, demand it: Telefol, Nahuatl, Ethiopic Semitic, and Maung, are just a few. It has been observed that perfective verb forms can be freely used for the expression of generic statements (see Czech and Russian examples above). In addition, and what is even more significant, generic markers can be attached to verb forms with specific perfective markers. For instance, in the New Guinea language Awa (Loving and McKaughan 1964) generic marking is achieved through complete reduplication of the verb stem. The generic forms may clearly co-occur with 'punctiliar' and 'completive' morphemes (themselves reduplicated as a part of the verb stem), as is illustrated in (13):

(13) Awa (New Guinea)

a.	subiq-	ma-	subiq-	mar-	iq
	hit	PUNCT	hit	PUNCT	3PERS

'He is always hitting'

b. taga- ru- taga- rur- iq
touch COMPL touch COMPL 3PERS
'He is always looking, finishes and looks again'

In another Pacific language, Wahgi, Phillips (1976) reports that there are two 'habituative' morphemes that occur as a part of the 'aspectual' complex of the verb that includes "absolute completive, completive, continuative, potential, habituative, and similitude". One generic morpheme may co-occur with all these except for the 'continuative'; the other may not occur with the 'similitude' aspect in addition. But both occur freely with what are here described as 'completive' and 'absolute completive' morphemes. Other languages where there are reported co-occurrences between generic and perfective morphemes include Kapau (Oates and Oates 1966), Mba (Tucker and Bryan 1966), Fore (Scott 1973), Engenni (Thomas 1978), Southeast Pomo (Moshinsky 1974), and others.

On the basis of our survey of the relation between genericity and aspect across languages we come to the conclusion that all the possible combinations in the domain of formal expression of genericity and aspect are attested. This is shown in table 7:

Table 7: Genericity and (grammatical) aspect markers

[+genericity,	+aspect]	Czech
[+ genericity,	-aspect]	Guarani
[- genericity,	+aspect]	French
[- genericity,	-aspect]	German

Along with other observations in this section, this supports our claim that genericity cannot simply be a subcategory of imperfectivity, contrary to Comrie (1976, 1985), and others. In general, we do not see any necessary formal connection between genericity and aspect.

To conclude the section on genericity and aspect, let us briefly look at the proposal to regard genericity as a special case of 'lexical aspect'. At the outset of this paper we claimed that generic sentences are semantically stative (cf. Carlson 1989:168; Carlson and Pelletier 1995). Why cannot we then consider genericity to be a special type of states? This position is taken, for example, by Smith (1991:87). Against this it can be objected that generic sentences are not just stative sentences and that there are significant differences between generic sentences and those with lexically stative verbs. A detailed analysis of these differences can be found in Krifka et al (1995). Let us here mention just two. First, only generic sentences, but not sentences with lexically stative predicates, have corresponding progressive counterparts denoting an instance from which, along with other such instances, one can infer a regularity.

(15) a. Pluto chases trucks
b. Pluto is barking and chasing that UPS truck again—go and put him on a leash

(16) a. John knows French
b. *John is knowing French so well

The reason for the ungrammaticality of (16b) is motivated by the observation that lexically stative predicates "have no corresponding episodic predicate in the lexicon that characterizes all the situations which count as direct evidence of the 'knowing French' behavior" (Krifka et al. 1995:37). Ryle's explanation (1949, chap. 5) for such lexical gaps is that there are so many different behaviors in which 'knowing French' can manifest itself on a given occasion that there can be no single episodic verb to denote them all. Second, the eventuality type of the individual instances that constitute a regularity is preserved in the derived generic sentence. For example, generics based on agentive stage-level predicates can be combined with forms related to agency and control. In contrast, lexically stative predicates never allow this, as is shown in the following examples (taken from Smith, 1991:42-3):

(17) a. Mary deliberately refuses dessert every Friday
b. I persuaded Mary to play tennis every Friday
c. What Mary did was play tennis

(18) a. ?* John deliberately knew Greek
b. ?* I persuaded Mary to know Greek
c. ?* What Mary did was know the answer

4. Conclusion

We have shown that there is no necessary formal connection between genericity and aspect. Surveying reports from (several hundreds of) grammars of how generic markers fit in morphologically with the TMA categories, we actually find no really consistent pattern. One simply does not find generic markers consistently expressed as alternatives to aspectual markers, or tense markers, or any other identifiable class. So, for instance, in Swahili there is the generic prefix *hu-* which alternates with the infinitive marker *ku-* (Polomé 1967). But, if we move to Gibadal, the generic marker alternates with 'subordinating' morphemes that have nothing to do with infinitival marking (Geytenbeck and Geytenbeck, 1971). Ewondo (Redden, 1979) has habitual marking reportedly alternating with the markers for, notionally, "iterative, nearly, in spite of, always, recently, first, properly, and fast". Piro, according to Matteson (1965), lists the 'characteristic' marker among a class of items including "modification, incorporated noun, incorporated postpositive, relational *-le-*, temporal, transitory, and frequentitive continuative". The situation in Izi appears similar (Meier, Meier, and Bendor-Samuel 1975) in so far as it appears to have a large and heterogeneous class of 'extensor' morphemes in which the generic marker participates. Gwari (Hyman and Maguji 1970) has a marker that alternates with main verbs. Otoro, Shilluk and Lango (Tucher and Bryan 1966) have generic markers that are in complementary distribution with present progressive, past, and future markers, whereas the closely related Alur has a 'habitual aspect' which co-occurs with all tenses instead of alternating with them. Yoruba has a generic preverbal marker that excludes other particles 'with modal meaning'. In Kewa, a New Guinea language, the generic suffixes alternate with 'conditional, emphatic, interrogative, imperative, oppositive' markers (Franklin 1964). In Biloxi, the generic 'mode' has its own distribution (Einandi 1976). If this all sounds a bit inconsistent and confusing, that is precisely the point.

To claim that there is no necessary formal connection between genericity and aspect is not to deny that there are certain formal and semantic affinities between genericity and aspect. Natural languages either always or almost always allow for the expression of genericity by imperfective forms alone. Furthermore, in many languages, there is a tendency for the specifically generic morphemes to attach to imperfective bases (e.g., Czech). This raises the question whether this is a necessary co-occurrence on general semantic grounds. In fact, generics are aspectually stative (cf. Carlson and Pelletier 1995) and the aspectual character of imperfectives seems to be more semantically compatible with stativity than that of perfectives. There is also a historical connection between imperfectivity and genericity. Formal markers of imperfectivity may develop from markers of iterativity, frequency, or genericity and/or be synchronically homonymous with markers of imperfectivity (cf. Czech, Russian, Polish). However, at the same time, we see that there is no conflict between the semantics of perfectivity and genericity. In a number of languages many specifically generic morphemes can freely co-coccur with perfective bases and perfective verb forms can freely be used for the expression of generic statements (in Slavic languages). Our cross-linguistic studies strongly suggest that if languages use perfective verb forms to convey genericity and/or use specific generic markers on perfective verb forms for this purpose, they will also use imperfective verb forms, progressives, continuatives, etc. in this way. This finding suggests a possible implicational universal. We would like to leave the possibility of such a universal for future research.

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South Slavic Clitic Placement is *Still* Syntactic[*]

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1. Introductory Remarks

This paper sketches out some of my ideas about special clitic placement in the Slavic languages. My main claim will be that clitics play an extremely active part in their syntactic fate. While much of the time a host comes to them, when this fails to occur clitics search for a host themselves. I will argue that in doing this they take advantage of any syntactic operation available to find a suitable host, possibly including lowering.

There has been much recent debate about whether clitic placement can be handled exclusively through the exploitation of familiar syntactic categories and movement mechanisms or whether some special phonological reordering is required, such as Halpern's "Prosodic Inversion" (PI). I will try to show that clitic placement is a syntactic phenomenon and should be assimilated to other more familiar types of syntactic movement rules, rather than involving a special kind of phonological clitic placement operation. Clitics are syntactic entities—in particular, functional heads—and they move as such. There is a straightforward way of introducing apparent phonological effects into clitic behavior: if the output of the overt syntax does not meet PF requirements, then the derivation will crash at PF. Thus, although clitic placement is done by regular rules of syntax, the phonology in essence subsequently "filters out" any syntactic representation that upsets it, as in Bošković (1995).[1]

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[*] My thinking about Slavic clitics is in evolution, hence the usual caveats and words of caution hold; see especially fns. 10, 17. Some of ideas herein have been presented in other forums, including AATSEEL 1996 and colloquia at Harvard, Yale, Princeton and Stanford, and I acknowledge valuable feedback from those audiences. This work has also benefited from discussion with numerous linguists, including but not limited to L. Billings, Ž. Bošković, W. Browne, I. Čašule, T. Holloway King, R. Izvorski, H. Lasnik, O. Mišeska-Tomić, E. Petroska, Lj. Progovac, N. Richards, C. Rudin, R. Slabakova, S. Stjepanović, J. Toman, J. Uriagereka, S. Vukić.

[1] The fact that different clitics behave differently is consistent with the current view that syntactic variation is lexically driven. It is reminiscent of the kinds of variation one finds in anaphora systems, which

2. Against Prosodic Inversion

2.1. Some Serbian/Croatian Facts

Although word order is generally relatively "free" in Slavic, the clitics are required (i) to appear in a particular position (or positions) in the sentence and (ii) to be ordered in specific ways among themselves.[2] In SC the clitics go in second or "Wackernagel" position:

(1) a. Vesna **mu** uvek nudi čokoladu.
Vesna him always offers chocolate
'Vesna always offers him chocolate.'
b. Uvek **mu** nudi čokoladu Vesna.
c. Nudi **mu** uvek čokoladu Vesna.
d. Čokoladu **mu** Vesna uvek nudi.

The debate centers around whether this position should be defined in prosodic or syntactic terms. A standard proposal is that clitics in SC can be either prosodically or syntactically dependent, with these two factors in competition, so that either may prevail. A typical explanation of the variation in (2) is thus that the clitic cluster is free to fall either after the first prosodic word (2a) or after the first syntactic phrase (2b). It cannot however be initial, as in (2c); instead the verb must appear first, as in (2d).

(2) a. Taj **mi je** pesnik napisao knjigu.
that me.dat aux.3sg poet wrote book
'That poet wrote me a book.'
b. Taj pesnik **mi je** napisao knjigu.
c. ***Mi je** taj pesnik napisao knjigu.
d. Napisao **mi je** taj pesnik knjigu.

---

have been successfully interpreted in terms of the morphological properties of the specific anaphors. That is, idiosyncratic properties of individual words and morphemes, rather than the parametric "switches" on otherwise universal principles of the earlier "Principles and Parameters" model, determine the relevant differences. It should thus be borne in mind that when a claim is made about a particular clitic being, say, proclitic or enclitic, this will not necessarily be true of all the clitics in that language.

[2] Clitics are represented in boldface throughout.

2. Prosodic Inversion

An important line of research, stemming from Zwicky (1977) and best exemplified by Klavans (1982) and Halpern (1992/1995), has therefore been to pursue a mixed system, whereby reference may be made to both types of criteria in anchoring the clitics. In Halpern's version of PI the clitics move to initial position, adjoining to IP.[3] A phrase can then move to their left, to [Spec, CP], producing (2b). If however this fails to occur, the output of the syntax will be (2c). PI then applies to move the clitics to after the first prosodic word to their right—*taj* in example (2)—producing "split" (2a).

There are numerous objections to PI in the literature which I do not have space to repeat here. Rather I will concentrate on arguments that clitic placement displays clearly syntactic effects and that the apparent advantages of PI are spurious.

2.2.1. Against PI in SC: Syntactic Effects

As demonstrated by Ćavar and Wilder (1994), Franks and Progovac (1994), and Progovac (1996), inter alia, clitic placement in SC is subject to familiar syntactic constraints. First, Progovac argues that, despite predictions made by PI, although different phrases can support clitics, V is the only head which can. Any other head-complement relation is an impenetrable context, dubbed a "fortress" by Halpern. The fact that PI fails in her examples (3a) and (3b) is a serious problem for his phonological movement account, since it should not be able to discriminate *syntactic* criteria.

(3) a. *[$_{P}$ Prema] **ga** **je** Milanu Marija bacila,
towards it.acc aux.3sg Milan.dat Mary threw
a ne od njega.
and not from him
'Mary threw it toward Milan, not away from him.'
b. ?*[$_{N}$ Roditelji] **su** **se** uspešnih
parents aux.3pl refl successful.gen
studenata razišli.
students.gen dispersed
'The parents of the successful students dispersed.'

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[3] Halpern (1992:chapter 3) slightly revises this so that clitics are adjoined to CleftP, a phrase he posits between CP and IP. This makes exactly the wrong prediction regarding adjunction of a phrase to IP.

Schütze (1994, 1996), who offers perhaps the most persuasive argumentation for PI, has only some vague suggestions about accommodating fortresses in prosodic rather than syntactic terms.[4] Although there is variation among speakers in the tolerance of "invading" fortresses, Schütze (1996:242) notes a correlation between allowing clitics inside and allowing *syntactic* extraction from the fortress, which completely contradicts his PI account.

Progovac (1993, 1996) makes a distinction between "subjunctive-like" and "indicative-like" complement clauses on the basis of a broad range of syntactic criteria. The fact that clitic placement also respects this dichotomy shows that it too is a syntactic phenomenon: clitic climbing in SC only takes place out of subjunctive-like complements. Compare (4d) with (4b):

(4) a. Milan kaže da **ga** vidi.
Milan says C him.acc sees
'Milan says that he can see him.'
b. *Milan **ga** kaže da vidi.
Milan him.acc says C sees
c. Milan želi da **ga** vidi.
Milan wishes C him.acc sees
'Milan wishes to see him.'
d. Milan **ga** želi da vidi.
Milan him.acc wishes C sees

Obviously, there can no phonological explanation of domain extension in subjunctive clauses for various syntactic dependencies, including movement, which crucially embraces clitic placement. It is for reasons such as this that even Schütze (1996) concedes that almost all SC clitic placements are syntactic. There is only a miniscule residue of facts which suggest PI might be inescapable.

2.2.2. Against PI in SC: Dubious Advantages

It is often claimed that only PI can handle "splitting" constituents, as in the split DP in (2a) or the split PP in (5).

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[4] His one example of a heavy PP tolerating separation, *Studenti su iz prelepog grada na moru upravo stigli* 'The students from the beautiful town on the sea have just arrived', from Percus (1993), is problematic since the PP is not only an adjunct, but also one which is ambiguous between NP and clasual interpretations.

(5) U veliku **je** Jovan ušao sobu.
in big aux.3sg Jovan walked room
'Jovan walked into a large room.'

Without going into details, I assume the kind of "remnant topicalization" analysis argued for elsewhere by myself, Progovac, Ćavar, and Wilder, whereby extraposition of NP from inside the phrase moved to initial position precedes the actual fronting of that phrase. Crucially, I take "NP" to mean a head noun plus its complement, if any, assuming the kind of structure for DP proposed by Abney (1987), where AP is not included in NP, but rather heads its own projection dominating NP. This explains the contrast in (6), assuming NP but not AP can move out of DP:

(6) a. U izuzetno veliku **je** Jovan ušao sobu.
in exceptionally large aux.3sg Jovan walked room
'Jovan walked into an exceptionally large room.'
b. ?*U izuzetno veliku **je** Jovan ušao
in exceptionally large aux.3sg Jovan walked
praznu sobu.
empty room
'Jovan walked into an exceptionally large empty room.'

There is no way PI can distinguish these two contexts, since the relevant information—NP or AP extraction—is syntactic, despite Schütze's (1996:238-9) claims. Also, PI clearly cannot handle (6a) anyway, or comparable examples adduced by Ćavar (1996:58), since the clitic seems to interrupt the PP but does *not* fall after the first prosodic word. A further indication that (5) must involve the preposition plus the adjective as a *syntactic* unit, as pointed out to me by Ž. Bošković, is that fact that it moves as a single *wh*-phrase in instances of unequivocal syntactic movement, such as (7).

(7) U koju tvrdiš da **je** Jovan ušao sobu.
into which claim C aux.3sg Jovan walked room
'Into which room do you claim that Jovan walked?'

In general, then, the claim is that clitics can "split" phrases to the extent that those phrases can be broken up anyway, so that in point of fact the clitics are never actually doing any "splitting".

Another phenemenon traditionally taken as problematic for syntactic movement accounts is the "splitting" of names, which some speakers allow, as in (8), from Browne (1975:114); see also Halpern (1992/1995), Progovac (1996), and Schütze (1996):

(8) ?Lav **je** Tolstoj veliki ruski pisac.
Leo aux.3sg Tolstoi great Russian writer
'Leo Tolstoi is a great Russian writer.'

Splitting of proper names is in fact syntactically driven, and can only occur when both first and last names are treated as separate heads. Although one ordinarily declines both parts, it is marginally possible just to decline the first name, as in (9).

(9) ?Lava Tolstoj čitam.
Leo.acc Tolstoi read
'I am reading Leo Tolstoi.'

Splitting is however only possible when both parts are declined, as shown in (10). Rather than providing evidence for PI, as typically claimed, the correlation between splitting and declining both parts constitutes a serious problem for any PI-based account.

(10) a. ?Lava **sam** Tolstoja čitala.
Leo.acc aux.1sg Tolstoi.acc read
'I read Leo Tolstoi.'
b. *Lava **sam** Tolstoj čitala.
Leo.acc aux.1sg Tolstoi read

2.2.3. Against PI in SC: False Predictions

In addition to PI not taking place in fortresses, Ćavar (1996) points out a specific problem with the claim that clitics in SC are adjoined to IP. A point frequently made is that the clitics follow the first *wh*-phrase rather than the group of them:

(11) a. Šta **je** Ivan komu dao?
what aux.3sg Ivan whom.dat gave
'What did Ivan give to whom?'
b. Šta **je** komu Ivan dao?
c. *Šta komu **je** Ivan dao?

Under the standard analysis of multiple *wh*-movement in Slavic, due to Rudin (1988), only the first of multiple *wh*-phrases in SC is in [Spec, CP]; the others are adjoined to IP. This assumption explains why (11b) is grammatical, rather than (11c): (11c) would require the clitic ***je*** to be in a lower head position than C°, which given the interrogative *šta* 'what', must be the highest one in the structure.

Ćavar (1996) offers similar arguments based on the fact that scrambling can only adjoin a phrase to IP *below* the clitics.

3. Clitics as Functional Heads

3.1. Second Position Clitics

3.1.1. SC Clitics Go to Highest Position They Can

I assume a clause structure roughly as in (12), although phrases only as high as called for are actually projected in any given clause:

(12) $[_{CP}\ C\ [_{AgrSP}\ Agr_S\ [_{TP}\ T\ [_{AgrIOP}\ Agr_{IO}\ [_{AgrOP}\ Agr_O$
$[_{AuxP}\ Aux\ [_{vP}\ SUB\ v\ [_{VP}\ IO\ [_{V'}\ V\ OBJ\ ]]]]]]]]]$

Clitics are generated in various functional head positions in the clause. Second position pronominal clitics, as in SC, are generated in argument positions as D° (or K°) heads. In SC, they have a phonological requirement, hence one which must be met at PF. The clitics and the material around them move by syntactic means, but if the syntax happens to leave a clitic in a place that is not sanctioned phonologically, then the derivation will crash at PF.

Although it has often been claimed that Wackernagel position clitics are in C°, Bošković (1995) demonstrates that this is not a consistent position.[5] I assume instead that second position clitics are realized in the highest head position projected. They reach that position by moving first to the appropriate Agr° for Case-checking purposes, then continuing until they reach the highest functional head in the phrase structure. How can SC clitics be forced to appear *as high as possible*, not just with something to their left? Special clitics move to address some kind of syntactic deficiency. Such an assumption is I think inescapable, since a syntactic deficiency (in addition to the obvious phonological one of not projecting prosodic structure) is the defining characteristic of a special clitic, the property that distinguishes them from simple clitics.

Further, the driving force behind clitics moving to second position should be connected to the fact that this is something verbs also do.[6] Since V2 exists, the minimalist assumption is that all languages are V2 at LF. All verbs undergo head movement, raising as high as they must overtly and completing the raising covertly.[7] There are then two ways of instantiating the relationship between clitics and verbs: either (i) clitics move because they are looking for their verbs or (ii) the verb and the clitics both move for the same reason. Under the first variant clitics "know" that verbs must eventually raise to the highest functional head in the phrase structure, they just don't know that the verb (or its features) does not actually get to where the clitics are until LF. A possible conceptual glitch arises however since the syntactic deficiency that makes second position clitics seek the verb must presumably be stated in terms of *strong* features, but moving the clitics in the syntax to where the verb *is going to be at LF* has to be enough to satisfy these strong features. The second variant gets around this dilemma, although the details remain to be worked out.[8]

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[5] I thus reject the simple solution to defining Wackernagel position that SC clitics must move to C° on empirical grounds: a putative feature of C° could not be "attracting" clitics since clauses are not always CPs and second position clitics are not always in C° anyway.

3.1.2. SC Clitics Are in Separate Functional Heads

The judgments in (13), due to Stjepanović (1996), provide compelling evidence that SC clitics head distinct projections:

(13) a. Ona **mu** **ga** **je** dala,
she him.dat it.acc aux.3sg gave
a i ja **sam** **mu** **ga**. dala.
and also I aux.1sg him.dat it.acc gave
'She gave it to him, and I did too.'

b. Ona **mu ga je** dala, a i ja **sam mu** ga dala.

c. Ona **mu ga je** dala, a i ja **sam** mu ga dala.

---

[6] That is, in keeping with traditional ideas recently highlighted by Anderson (1993), clitic second and verb second are part and parcel of the same Wackernagel phenomenon. I just want to argue that this is strictly a *syntactic* phenomenon.

[7] V2 may not even be a consistent position; see Zwart (1993) on Dutch.

[8] Conceivably, there is some functional projection of V, perhaps T or AgrS, to which the pronominal Agr clitics become attached and *that head* moves overtly as high as it can, and the features of the verb move at LF to that same highest position for checking, or in V2 languages the verb itself moves, overtly. The right kind of solution to the clitic problem depends on what the right kind of solution to the V2 phenomenon in general turns out to be.

d. ?*Ona **mu ga je** dala, a i ja **sam** mu **ga** dala.

The possibility of eliding material, indicated in outline, reflects the phrase structure in (12), where AuxP ellipsis occurs in (13a), Agr_OP ellipsis in (13b), and Agr_IOP ellipsis in (13c). (28d), on the other hand, can only be obtained by eliding the Agr_IO dative head ***mu*** independently of AuxP ellipsis, an extremely marginal possibility.[9] These facts show that, wherever they end up, the clitics are introduced as separate functional heads.[10]

S. Stjepanović (p.c.) also notes an interesting effect with respect to clitic climbing out of subjunctive *da*-clauses in SC, as in (4d) above. If the downstairs verb has multiple arguments, in addition to climbing both or neither, it is also possible to climb only one out of the *da*-clause, as in (14), where the dative clitic has climbed and the accusative one remains in the lower clause:

(14) a. Želio **sam** **mu** da **ga** kupim.
wanted aux.1sg him.dat C it.acc buy.1sg
'I wanted to buy him it.'

b. Marko **mu** **je** želio da **ga** kupi.
Marko him.dat aux.3sg wanted C it.acc buy.3sg
'Marko wanted to buy him it.'

---

[9] The grammaticality of (i) shows that ellipsis cannot be simply a matter of surface string adjacency, as suggested to me by P. Sells:

(i) Ja **sam** **mu** **ga** dala,
I aux.1sg him.dat it.acc gave
a i ona mu ga **je** dala.
and also she him.dat it.acc aux.3sg gave
'I gave it to him, and she did too.'

At the relevant level of abstraction, ***je*** heads a phrase *above* both AgrIO head ***mu*** and AgrO head ***ga***, presumably TP or AgrSP.

[10] They raise however a serious problem for the strictly syntactic approach adopted here. Specifically, ellipsis must target the phrase in which clitic features are checked *before* the clitic continues its upwards move. This is impossible if ellipsis is a PF phenomenon and clitic raising is syntactic. The paradox might be resolved by abandoning the syntactic raising analysis in this paper and letting clitics combine in the morphology, undergoing postsyntactic merger, as in "Distributed Morphology" and following Marantz (1988). Further evidence for rejecting syntactic clitic cluster formation can be found in the fact that Czech adverbials can be part of the cluster *if they happen to fall in it and they themselves are clitics*; cf. Avgustinova and Oliva (1995:25).

It is however not possible to climb the accusative to the exclusion of the dative (15):

(15) a. *Želio**sam** **ga** da**mu** kupim.
wanted aux.1sg it.acc C him.dat buy.1sg
b. *Marko **ga je** želio da**mu** kupi.
Marko it.acc aux.3sg wanted C him.dat buy.3sg

The lower Agr head cannot climb over the higher one, which is a familiar Relativized Minimality effect.

3.1.3. Czech Clitics Are *Only* Functional Heads

In Czech (and probably also Macedonian) auxiliary forms in the *jsem* 'I am' series are clitics and copular forms are not. Toman (1980) describes no less than five formal differences between these two functions, listed in (16); see also Fried (1994).

(16) a. As copula can be fronted to initial position in Yes/No questions, as auxiliary cannot;
b. Negation prefixes to copula, but not to auxiliary;
c. Colloquial contraction of 2sg *jsi* to *s* is possible with auxiliary, but not with copula;
d. Colloquial dropping of 1sg and 1pl forms as auxiliary, but not as copula;
e. Special 2sg form *seš* for *jsi* as copula, but not as auxiliary.

The data Toman presents indicate that items in the *jsem* series are clitics only in their auxiliary function, and that as a copula there is strong pressure to distinguish them as ordinary present tense verb forms. The form *jsem* is thus ambiguous between being the 1sg of the copular verb *být* 'to be' or the realization of subject agreement features, and its status as a clitic depends on this factor. This is because only a functional head is eligible to be a special clitic, and only as a clitic does *jsem* lack prosodic structure in its lexical representation, projecting no word tree of its own. Without this, it is simply unpronounceable.

3.2. Verb Adjacent Clitics

3.2.1. Bg and Mac Clitics Are Generated in Agr

I now turn to the analysis of verb adjacent clitics as functional heads. My basic approach is that verb adjacent clitics, as in Bulgarian (Bg) and Macedonian (Mac), are generated directly in Agr and never need to raise overtly, since the verb comes to them. The verb adjacent option provides another obvious reason why special clitic placement in general should be connected to the syntax of verbs and, more importantly, it gives us a potential handle on the problem of variation between Wackernagel position and verb adjacent clitics.[11] Some basic Bg and Mac examples follow:

(17) a. Vera **mi go** dade včera. [√Bg, √Mac]
Vera me.dat it.acc gave yesterday
'Vera gave me it yesterday'
b. Včera **mi go** dade Vera. [√Bg, √Mac]
c. Včera Vera **mi go** dade. [√Bg, √Mac]
d. Vera **mi go** včera dade. [*Bg, *Mac]

(18) a. **Mi go** dade Vera včera. [*Bg, √Mac]
b. Dade **mi go** Vera včera. [√Bg, *Mac]

Verbal auxiliaries and pronominal clitics in Bg and Mac go immediately before the verb, hence the order in (17c) is acceptable in Bg and Mac but not in SC, whereas the order in (17d) is acceptable in SC but not in Bg or Mac. The pair in (18) shows that, in Bg but not Mac, if there is nothing to the left of the clitic cluster, then the verb precedes rather than follows it. This contrast reveals that in Mac most clitics are prosodically neutral, whereas in Bg most are enclitic only.[12]

Following a number of analyses, including Halpern and Fontana (1994), Izvorski (1995), and Rudin (1997), the possibility of clitic doubling in Mac (19a) and Bg (19b) is a major reason for maintaining that verb adjacent clitics are generated outside VP.[13]

---

[11] Moreover, in the history of Slavic there is clear migration from one option to the other, suggesting that these two strategies for clitic placement have to be closely related, with the difference between verb adjacent and second position clitics being relatively superficial. See especially Izvorski (1995) for insightful discussion of Bulgarian.

[12] As emphasized in fn. 1, variation is a lexical phenomenon. Thus, for example, Mac interrogative *li* is enclitic rather than proclitic and the Bg future marker *šte* is proclitic rather than enclitic.

(19) a. Marija *(**go**) poznava učenikot. [Mac]
Mary him.acc knows pupil.def
'Mary knows the pupil.'
b. Ivan (**go**) târsjat. [Bg]
Ivan him.acc seek.3pl
'They are looking for Ivan.'

If the pronominal clitics are generated in Agr°, then an argument phrase (or its features) can be "checked" in [Spec, AgrP] (or Agr°, at LF). This account provides corroboration for the difference between the two types: doubling is possible precisely because the clitic is generated in Agr, allowing the associated argument to have *its* case features also checked. Pronominal clitics that seek second position, on the other hand, *are* that argument, so when they move to Agr, there is nothing left behind for them to "double".

3.2.2. Clitic Lowering?

There is an on-going debate about the existence of syntactic clitic lowering (as opposed to PI); this was proposed for Bg *li* by Rivero (1993) and rejected by Izvorski, King and Rudin (in press). Here I briefly consider some Mac constructions in which pronominal clitics necessarily follow rather than precede their hosts. The motivation cannot be prosodic, since as shown in (18) these elements are proclitic in Mac.

The relevant verbal contexts are after imperatives and gerunds, which clitics always *follow* in Mac:[14]

(20) a. Donesi **mi** **go**!
bring.impv me.dat it.acc
'Bring it to me!'
(***Mi go** donesi!)

---

[13] There are notable differences in the factors that call for clitic doubling in the two languages. According to Rudin (1997), among others, doubling is more sensitive to specificity in Mac (typically marked by a postpositive demonstrative) and to topicality in Bg.

[14] The one element which can support preverbal clitics in Mac imperative clauses (but not gerundive ones!) is *ne* 'not', presumably because it is a head and the clitic can (but need not) raise to it.

b. Penkaloto kupuvaj **mi go**!
pen.def buy.impv me.dat it.acc
'Buy the pen!'
(*Penkaloto **mi go** kupuvaj!)
c. Utre kupuvaj **mi go** penkaloto.
tomorrow buy me.dat it.acc pen.def
'Buy the pen tomorrow!'
(*Utre **mi go** kupuvaj penkaloto.)

(21) a. Nemarno pišuvajk'i **go** pismoto, ...
carelessly writing it.acc letter.def
'Carelessly writing the letter, ...'
(*Nemarno **go** pišuvajk'i pismoto, ...)
b. Zaneseno gledajk'i **go** filmot, ...
enthusiastically watching it.acc film.def
'Enthusiastically watching the film, ...'
(*Zaneseno **go** gledajk'i filmot, ...)

The clitics in (20) and (21) cannot be preverbal. Prosodic factors cannot be relevant, since the clitics in Mac can be phonologically supported in either direction. There thus has to be some syntactic deficiency. I suggest that since these verb forms do not raise overtly to the clitics (presumably because of weak imperative and gerundive features), the clitics lower onto them.

Another obvious context in which Mac and Bg clitics are not initial, and where lowering may be implicated, is inside DPs. Historically dative clitics function as possessive pronouns in both languages. A range of examples is given for Bg (22) and Mac (23).[15] Since these clitics are morphologically identical to clausal Agr$_{IO}$, I posit an optional Agr$_{IO}$P within DP, as in (24):[16]

(22) a. knigata **vi**
'your book'
b. semejnija(t) **im** praznik
'their family holiday'
c. mnogoto **mu** novi knigi
'his many new books'
d. večno mladata **ni** stolica
'our ever young capital'

---

[15] In Bg these clitics can express a variety of relations. In Mac their use is highly restricted, limited to the expression of possession of "family-like" relations; examples other than (23a) are quite awkward.

[16] AgrIO only occurs after [+def] D. Unlike the possessive clitic, the definite suffix (article) in Mac and Bg is *inflectional*; see Halpern (1992) or Mišeska-Tomić (1996) for arguments. (I accordingly reject the contrived head movement approach in Fowler and Franks (1994).)

e. [polučenata **ì** sâs mâka] stipendija
'her received with pain scholarship'

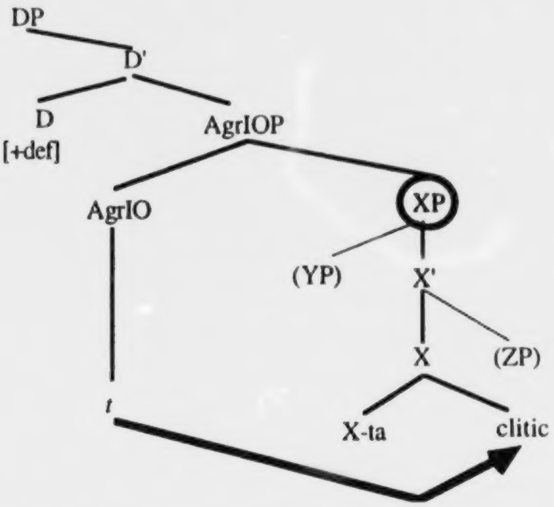
f. [vernijat **ti** na žena **si**] brat
'your faithful to his wife brother'

(23) a. žena **mi** b. pomladiot **ni** sin
'my wife' 'our younger son'
c. sakanata **mi** prva žena d. mnogu postarite **ì** deca
'my beloved first wife' 'her much older children'

(24) $[_{DP}\ D_{[+def]}\ [_{AgrIOP}\ Agr_{IO}\ [_{QP}\ Q\ [_{AP}\ AdvP\ A\ [_{NP}\ N\ ]]]]]$

Abstracting away from its limited use in Mac, the clitic appears in the same position *in both languages*, namely, after the head of the highest XP to the right of Agr_{IO}. This is true despite differences in prosodic requirements between Mac and Bg pronominal clitics. Phonology must therefore be irrelevant. I suggest instead that, unlike in finite clauses, no head has any independent reason to move up to adjoin to the clitic. The clitic is thus stranded and has to move itself to be supported. The clitic lowers to the first available head, which is to the X° to its right, as shown in (25).[17]

(25)



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[17] I am making several ancillary assumptions which warrant further investigation. Although movement is the less economical option, the unavailability of raising in (25) is problematic—the fact that D never has phonological content should not be relevant *to the syntax*, again suggesting merger over syntactic head movement. (Alternatively, AgrIOP could either orginate above DP or raise overtly to [Spec, DP].)

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Permission Sentences in Dynamic Semantics

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1. Introduction

In this paper, I present a dynamic semantics of permission sentences which analyzes the effects of deontic operators in discourse. Permission statements are known to be problematic for logical and linguistic theories based on standard systems of modal logic. These systems lead to predictions that are contrary to what natural language intuitions dictate. The tension between traditional modal deontic semantics and the proper characterization of the meaning of permission statements involving the deontic expression *may* has surfaced in the form of a number of so-called paradoxes or problems. The most relevant ones in the philosophical literature are (i) the paradox of free choice permisssion (Von Wright, 1969; Kamp, 1973) and (ii) Lewis'(1979) problem about spurious permission. My proposal gives a solution to these two problems and to the intrincacies of the meaning of boolean connectives in statements of this sort.

2. Free Choice Sentences

Consider the following sentences:

(1) a. You may eat a banana or a pear
b. You may eat a banana

(2) a. You may go to San Francisco or stay in L.A.
b. You may go to San Francisco

Sentences (1a) and (2a) are "free choice" permission statements. If the speaker utters (1a), he is giving the addressee permission to eat either a banana or a pear. In other words, the addressee is free to choose from the options presented from the speaker: eat a banana, eat a pear or both. Therefore, when the speaker gives permission to the addressee to eat a banana or a pear, he is giving him permission to eat a banana. Our intuitions are, then, that (1a) entails (1b) and (2a) entails (2b). Nevertheless, this represents a problem for standard systems of deontic logic, as noticed by Ross (1941), Von Wright (1969) and Kamp (1973,1979). In these systems, the entailment pattern that can be straigthforwardly derived is exactly the opposite, as the following proof shows:

(3) $\vdash P\phi \rightarrow P(\phi \vee \psi)$

Proof:	$P(\phi)$	Assumption
	$P(\phi) \vee P(\psi)$	$\vee$ intro.
	$P(\phi \vee \psi)$	Modal theorem
	$P(\phi) \rightarrow P(\phi \vee \psi)$	

Kamp (1973, 1979) found the accounts presented to date not satisfactory and proposed a solution in the spirit of Lewis' (1979) proposal. The solution consisted essentially in spelling out the semantics of commands and permission statements using some concepts that in a certain respect anticipate the dynamic view of meaning. A command, according to Kamp and Lewis, restricts the options for action of the addressee. A permission statement broadens the options for action of the addressee. The options for action of an agent at time t and world w are formally defined as the possible continuations of w after t in which the agent fulfills all his obligations and forbears doing the things from which he is prohibited.

Let $Per(w,t,B)$ denote the set of possible continuations of w after t in which the agent B fulfills his obligations and does not transgress anything he is prohibited from doing. Suppose that A utters in w at t the sentence *Clean my table!* and that B is the addressee of A's utterance. Let S be the set of worlds in which B cleans A's table. Then, the effect of A's command is to restrict the set of permitted continuations for B in w at t to those in which B cleans A's table:

(4) $Per(w,t,B) \longmapsto Per(w,t,B) \cap S$

A permission has the opposite effect in the set of permitted options for action of a given agent. If a speaker A tells B *You may* ϕ and S' is the set of worlds in which ϕ holds, then the effect of A's utterance is to enlarge the set of permitted options for B with S':

(5) $Per(w,t,B) \longmapsto Per(w,t,B) \cup S'$

In order to handle the entailment relation between (1a) and (1b) or (2a) and (2b), Kamp (1973) introduces a new notion of entailment, P(ermission)-entailment, defined as follows:

(6) ϕ P-entails ψ iff in every situation the set of worlds added to the options of the addressee through the use of ϕ includes the set of worlds added to the set of options through the use of ψ

Kamp (1979) abandons this solution because he considered it problematic with respect to Lewis' spurious permisssion problem, which we will discuss below. In a nutshell, the above definition of entailment predicts that when an agent is granting the permission stated in (7a) he is also granting (7b)—(7a) P-entails (7b).

(7) a. You may go to San Francisco
    b. You may go to San Francisco and burn my house

His new solution is to propose that the meaning of *You may ϕ or ψ* is computed by calculating separately first the option space granted by *You may ϕ* and the option space granted by *You may ψ*, and combining the two of them by set-theoretic union. Then, writing $[\![\phi]\!]^{Per}{}_{w,t}$ to denote the set of worlds added to the options of the addressee in $< w, t >$ through the utterance of ϕ, the following holds:

(8) $[\![\text{ You may } \phi \text{ or } \psi\ ]\!]^{Per}{}_{w,t} =$
    $[\![\text{ You may } \phi\ ]\!]^{Per}{}_{w,t} \cup [\![\text{ You may } \psi\ ]\!]^{Per}{}_{w,t}$

This resolves the entailment problem but, as pointed out by Rohrbaugh (1995), it predicts the equivalence of (9a) and (9b):

(9) a. I permit you to eat an apple or a pear
    b. I permit you to eat an apple or I permit you to eat a pear

The above sentences are not equivalent, nor are the following ones, illustrating the fact that VP-level disjunction does not have the same effect in permission sentences as sentence level (or speech-act level) disjunction does.

(10) a. You may go to San Francisco or stay in L.A.
     b. You may go to San Francisco or you may stay in L.A.

3. Strong and Weak Readings

Kamp (1979) also noticed that the sentence in (1a), repeated here as (11a), is ambiguous between two readings: a strong reading and a weak reading. In its "strong" or most salient reading it constitutes a free choice permission statement and entails (11b). In the "weak reading", (11a) simply states the speaker's ignorance about which disjunct is actually permitted. Then, (11b) entails (11a).

(11) a. You may eat a banana or a pear
     b. You may eat a banana

3.1. Properties of the Strong Reading

The strong reading of a permisssion sentence makes it a free choice permission statement: the speaker is granting permission to the addresse (12a) or telling the addressee that he is granting permission to a third person/s (12b):

(12) a. You may go to San Francisco or stay in L.A.
     b. John may go to San Francisco or stay in L.A.

The strong reading of a permission statement may be paraphrased by a performative sentence:

(13) *I hereby permit* you to go to San Francisco or stay in L.A

(14) John may buy an Opel or a Honda =
     I hereby permit John to buy an Opel or a Honda

Third, as was discussed previously, the following holds: $\models P(\phi \vee \psi) \rightarrow P(\phi)$. The opposite direction does not hold: $\not\models P(\phi) \rightarrow P(\phi \vee \psi)$. Also, in the strong reading the equivalence in (15) holds.

(15) $P(\phi \vee \psi) \equiv P(\phi) \wedge P(\psi)$

The following example illustrates the above equivalence. If the speaker is giving permission to John to buy an Opel or a Honda uttering (16a), then the permission granted is the same as the permission granted by (16b).

(16) a. John may buy an Opel or a Honda
     b. John may buy an Opel and John may buy a Honda

There is a variety of the strong reading in which the disjunction connective is construed as exclusive *or*. For instance, in the following discourse, the parent is most likely granting permission to buy a car or take a vacation but not both.

(17) As a gift for your graduation, you may buy this expensive car or take the trip to the Bahamas that you wanted so much

3.2. Properties of the Weak Reading

A permission statement in its weak reading is a free choice permission report: it simply states the speaker's ignorance about which disjunct is actually permitted.

(18) John may buy an Opel or a Honda =
John has been granted permission to buy an Opel or a Honda
(but I don't know which one)

In the weak reading of the above sentence, the speaker is reporting to the addressee that a third person has granted John permission to buy an Opel or a Honda. Consequently, permission statements in their weak reading may not be paraphrased by a performative sentence.

In comparison to the strong reading, it can be observed that the reverse entailment patterns arise: $P(\phi \vee \psi) \rightarrow P(\phi)$ does not hold, but $P(\phi) \rightarrow P(\phi \vee \psi)$ holds. Another entailment pattern of interest is the following one, illustrated in (19): $P(\phi) \vee P(\psi) \models P(\phi \vee \psi)$

(19) a. John may buy an Opel or John may buy a Honda $\models$
b. John may buy an Opel or a Honda

The weak reading of a permission sentence is a combination of a deontic and an epistemic statement. It cannot be considered a pure epistemic sentence. In other words, there is a subtle difference between the "permission report" reading and a pure epistemic reading. For instance, sentence (19a) in its epistemic reading means that it is possible that John buy a Opel or a Honda—perhaps because he has not decided yet about which one, or the speaker does not know the content of his decision, or John is hoping to get a loan to finance the car, etc. These are all circumstances that make the epistemic reading true. The permission report reading requires something different and much more specific, namely that the speaker is reporting the effect of a deontic permission statement.

4. Actions in Dynamic Semantics

The essence of the dynamic conception of semantics is to consider the basic meaning of a sentence to be not its truth-conditional content but its context-change potential. The meaning of an arbitrary expression in a state s is the change that it brings about to s. Let us assume that a conversation is in a discourse state s. Then, after processing a formula ϕ, the discourse moves to a state s', as depicted in (20). The state s' is like s except in those aspects that are not compatible with what ϕ expresses. Using a postfix notation, we write $s[\![\phi]\!]$ for the meaning of the formula ϕ in a state s, as in (21).

(20) $\rightarrow s \rightarrow \phi \rightarrow s' \rightarrow$

(21) $s[\![\phi]\!] = s'$ iff $s' \subseteq s$ and S

Different branches of dynamic semantics vary with respect to what they consider to be an information state. In DPL (Groenendijk and Stokhof, 1991) and DMG (Groenendijk and Stokhof, 1990) a state is a set of assignments of values to variables. In DRT, a state corresponds to a Discourse Representation Structure K, such that K is the DRS built after processing a discourse (a finite sequence of sentences). In Dynamic Modal Logic a state is a set of worlds. This is the conception of a state that we will be adopting here. Furthermore, states will be epistemically construed, ie., we will be talking about the knowledge state of an agent rather than of a discourse state or a conversation state. This point is important in the type of account that we will be developing.

Dynamic action semantics adds to standard dynamic semantics a more refined analysis of action expressions. This analysis, I claim, is needed in order to give a correct account of the semantics of permission sentences. I present an extension of current dynamic modal frameworks (Veltman, 1996; Groenendijk, Stokhof and Veltman, 1995; Van Eijck and Cepparello, 1995) that incorporates a dynamic semantics for actions (DAS), along the lines proposed in Pratt's (1978) process semantics, Van der Meyden's (1996) logic of permission and Hamblin's (1987) analysis of imperatives. An action expression α is conceived of as denoting a program, ie. a set of sequences of states. Consider the action expression α = *Brutus killed*

Caesar. [1] Let us assume that the expression α denotes in a model M and state s a set with three members. Each sequence represents an execution of the action (Israel, Perry and Tutiya, 1993), i.e., the way of performing the action that results in that sequence of states.

(22) $s[\![\alpha]\!]_M = \{< s_{21} ... s_{30} >, < s_{51} ... s_{60} >, < s_{81} ... s_{90}\}$

So, in the denotation of α above, each sequence represents a different execution of Brutus' action of killing Caesar in M. In one execution he stabs Caesar three times, in another he stabs Caesar thirty times, and in the third one he stabs him fifteen times. An execution of an action is a transition between states. The minimal requirement that all the sequences in the denotation of α have to satisfy is that in the initial state of the sequence Caesar is not dead, and in the final one he is.

(23)
$$\begin{array}{lcl} \bullet & \longrightarrow \quad \alpha \quad \longrightarrow & \bullet \\ s_{21} \not\models Dead(Caesar) & & s_{30} \models Dead(Caesar) \\ s_{51} \not\models Dead(Caesar) & & s_{60} \models Dead(Caesar) \\ s_{81} \not\models Dead(Caesar) & & s_{90} \models Dead(Caesar) \end{array}$$

A model for the language of DAS is a tuple $M = < W, S, P, \tau, V >$. W is a set of worlds and W = $\mathcal{P}(\mathcal{A})$, where $\mathcal{A}$ is a set of finitely many atomic sentences. This gives us the desired epistemic interpretation of worlds. A world is a set of facts—atomic sentences—in the knowledge base of an agent (Veltman, 1996). $S \subseteq \mathcal{P}(W)$ is the set of states, so a state is a set of possible worlds. The knowledge state of an agent is, then, a family of sets of facts, i.e., those that constitute possible epistemic alternatives. Information growth is represented as elimination of some of those possibilities.

P is a relation between states, $P \subseteq S \times S$, where $< s_i, s_j > \in P$ iff the transition from state s_i to state s_j represents a permitted state transition. Then, we say that a sequence of states $\sigma = < s_1 ... s_n >$ is permitted, $Perm(\sigma)$, iff every state transition in the sequence is in P. So, for instance, assume that $s[\![John\, got\, a\, pay\, raise]\!]_M = \{< s_{21} ... s_{30} >, < s_{51} ... s_{60} >\}$ and in s_{27} the proposition that John manipulated his sales report is true. Then, assuming that we are dealing with agents with standard ethical criteria, the first execution of the action is not permitted since it contains a state transition $< s_{26}, s_{27} >$

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[1] A perhaps more intuitive alternative would be to consider *kill Caesar* as an action expression and relativize it to agents. Here we stick to the simpler option.

which is not permitted. This corresponds to the intuition that an execution of the action of getting a pay raise involving a manipulation of sales reports is not permitted, even if the rest of the transitions that bring about the completion of the action are permitted.

The function $\tau : \mathbf{A} \rightarrow \mathcal{P}(S^+)$ is the interpretation function for atomic action expressions $\alpha \in \mathbf{A}$, i.e., $\tau(\alpha)$ is the set of sequences of states denoted by α. Finally, the function V maps atomic propositional symbols ϕ to the set of worlds where the proposition holds.

The expressions of the language of DAS are interpreted in a state s as follows:

$s\llbracket\phi\rrbracket = \{w \in s | w \in V(\phi)\}$
$s\llbracket\neg\phi\rrbracket = \{w \in s | w \notin V(\phi)\}$
$s\llbracket\phi \wedge \psi\rrbracket = (s\llbracket\phi\rrbracket)\llbracket\psi\rrbracket$
$s\llbracket\phi \vee \psi\rrbracket = \{w \in s | w \in V(\phi)$ or $w \in (s\llbracket\neg\phi\rrbracket)\llbracket\psi\rrbracket\}$
$s\llbracket\alpha\rrbracket = \{\sigma | \sigma \in \tau(\alpha) \& first(\sigma) = s\}$ (where if
$\sigma =< s_1 ... s_n >, first(\sigma) = s_1$ and $last(\sigma) = s_n$)
$s\llbracket\neg\alpha\rrbracket = \{\sigma | \sigma \notin \tau(\alpha) \& first(\sigma) = s\}$
$s\llbracket\alpha \cup \beta\rrbracket = s\llbracket\alpha\rrbracket \cup s\llbracket\beta\rrbracket$
$s\llbracket\alpha;\beta\rrbracket = \{\sigma_1 \frown \sigma_2 | \sigma_1 \in \tau(\alpha)\ \&\ \sigma_2 \in \tau(\beta)\ \&\ first(\sigma_1) = s\ \&$
$first(\sigma_2) = last(\sigma_1)\}$
$s\llbracket\alpha \rightarrow \phi\rrbracket = \{w \in s | \forall\sigma \in s\llbracket\alpha\rrbracket[w \in last(\sigma) \& w \in V(\phi)]\}$
Weak permission:
$s\llbracket\Diamond\alpha\rrbracket = \{w \in s | \exists\sigma \in s\llbracket\alpha\rrbracket[Perm(\sigma)]\}$
$s\llbracket\Box\alpha\rrbracket = s\llbracket\neg\Diamond\neg\alpha\rrbracket$
Strong permission:
$s\llbracket\pi\alpha\rrbracket = \{w \in s | \forall\sigma \in s\llbracket\alpha\rrbracket[Perm(\sigma)]\}$

Let us explain the clauses of the definition in more detail. An expression ϕ denotes in a state s the set of those worlds in s in which ϕ holds. Similarly, $\neg\phi$ denotes in s the subset of s constituted by the worlds in which ϕ does not hold. Another way of expressing it is: $s\llbracket\neg\phi\rrbracket = s - \{w \in s | w \in V(\phi)\}$. The denotation of the expression $\phi \wedge \psi$ is computed by updating first the state s with ϕ and, as a result, eliminating from s the worlds that are not in $V(\phi)$. Then, the resulting state is updated with ψ, yielding a final state in which the worlds that are not in $V(\phi)$ and the worlds that are not in $V(\psi)$ are eliminated. The interpretation of dynamic disjunction has an exclusive flavour built in. Updating s with $\phi \vee \psi$ restricts s to the set of worlds that are either in $V(\phi)$ or are not in $V(\phi)$ but are in $V(\psi)$. The dynamic content of an action expression α in a state s is the set of sequences of states σ in the denotation of α, $\tau(\alpha)$, such that the first coordinate of σ is s. Obviously, this represents the "atemporal" value of actions, and it suffices for our purposes. The effect of the past and future operators would be captured as follows—where $\prec_t$ is an ordering relation between states: [2]

$$s[\![P(\alpha)]\!] = \{\sigma|\sigma \in \tau(\alpha)\&\exists s'[s' \prec_t s\&last(\sigma) = s']\}$$
$$s[\![F(\alpha)]\!] = \{\sigma|\sigma \in \tau(\alpha)\&\exists s'[s \prec_t s'\&first(\sigma) = s']\}$$

The clauses defining operations on actions are straightforward. The formula $\alpha \to \phi$ may be read as "if α then ϕ" or, perhaps more properly, "after α, ϕ". The effect of the modal operators $\Diamond$ and $\Box$ amounts to existential and universal quantification over sequences of states in the denotation of an action. so, for any action α and state s, $\Diamond\alpha$ is supported by s iff there is a permitted sequence in the denotation of α or, in other words, if some execution of α is permitted. Conversely, s supports $\Box\alpha$ iff all executions of α are permitted.

In the above paragraph we have introduced an informal notion of support. A more precise definition of this notion, and of the derived notions of entailment and equivalence between formulas, is as follows:

(24) Support/Acceptance: s $\Vdash \phi$ iff $s[\![\phi]\!] = $ s
Entailment: $\phi_1 ... \phi_n \models \psi$ iff $\forall s.((s[\![\phi_1]\!])...[\![\phi_n]\!]) \Vdash \psi$
Equivalence: $\phi \equiv \psi$ iff $\phi \models \psi$ & $\psi \models \phi$

5. Explaining the Strong/Weak Contrast

The strong and weak readings of permission sentences are represented by the presence of the strong (π) or weak ($\Diamond$) permission operator respectively. The strong operator models free choice, whereas the weak operator models partial ignorance about permission. Recall that, following Veltman(1996), we are conceiving of worlds as sets of atomic propositions in the knowledge state s of an agent. Then, the update of s with $\pi\alpha$ adds the information that all the executions of α are permitted. Consider one of our favourite examples:

---

[2] For any states s, s', in a sequence σ, $s \prec_t s'$ iff i(s) & j(s') & i < j.

(25) You may take a banana or an apple

The strong reading of (25) states that any course of action in which the addressee takes a banana or an apple and such that it does not violate what the speaker considers permissible is permitted. This is precisely represented as follows:

(26) $s\llbracket \pi(Take(a\ banana)(you) \cup Take(an\ apple)(you))\rrbracket =$
$\{w \in s | \forall\sigma \in s\llbracket Take(a\ banana)(you) \cup$
$Take(an\ apple)(you)\rrbracket[Perm(\sigma)]\} =$
$\{w \in s | \forall\sigma \in s\llbracket Take(a\ banana)(you)\rrbracket \cup$
$s\llbracket Take(an\ apple)(you)\rrbracket[Perm(\sigma)]\}$

Now, the following facts are derived immediately applying the definitions:

Fact 1: $\pi(\alpha \cup \beta) \models \pi(\alpha)$
Fact 2: $\pi(\alpha \cup \beta) \equiv \pi(\alpha) \wedge \pi(\beta)$

Fact 1 captures in a straightforward way the entailment pattern of strong readings, whereas fact 2 derives the equivalence pointed out in (15). The reading of (17) and (27) with exclusive *or* requires an additional binary operation on actions ($\sqcup^e$):

$$s\llbracket \alpha \sqcup^e \beta \rrbracket = s\llbracket \alpha \rrbracket \cup (s\llbracket \neg\alpha \rrbracket)\llbracket \beta \rrbracket$$

(27) You may buy a Porsche or a Corvette

Then, we prove again a fact that derives the equivalence between the exclusive reading of (27) and sentence (28):

Fact 3: $\pi(\alpha \sqcup^e \beta) \equiv \pi(\alpha) \vee \pi(\beta)$

(28) You may buy a Porsche or you may buy a Corvette

Let us now consider the weak reading of permission sentences. A knowledge state s supports $\Diamond\alpha$ iff an execution of α is considered permitted in s. If a speaker utters (29), then he is asserting that there is a course of action in which the addressee takes a banana or an apple such that it does not violate what the speaker considers permissible (30).

(29) You may take a banana or an apple

(30) $s[\![\Diamond(Take(a\ banana)(you) \cup Take(an\ apple)(you))]\!] =$
$\{w \in s | \exists\sigma \in s[\![Take(a\ banana)(you) \cup$
$Take(an\ apple)(you)]\!][Perm(\sigma)]\} =$
$\{w \in s | \exists\sigma \in s[\![Take(a\ banana)(you)]\!] \cup$
$s[\![Take(an\ apple)(you)]\!][Perm(\sigma)]\}$

Facts 4 and 5 are again immediately derived applying the definitions, and predict the properties explained in section 3.2 above.

Fact 4: $\Diamond(\alpha) \vee \Diamond(\beta) \models \Diamond(\alpha \cup \beta)$
Fact 5: $\Diamond(\alpha) \models \Diamond(\alpha) \vee \Diamond(\beta)$

Lewis' (1979) problem about permission does not arise in DAS, because permission sentences do not merely enlarge the option set of the addressee. Only sequences of states consisting of permitted transitions are in the denotation of the permission operators. Therefore, from (31a) one cannot infer (31b) because presumably most of the executions of the action *burn my house* are not permitted even if the two conjuncts are true in the same worlds.

(31) a. You may go to San Francisco
b. You may go to San Francisco and burn my house

6. Extensions of the Analysis

Rohrbaugh (1995) observes that permission sentences are decreasing in the internal argument of the verb: (32a) entails (32b).

(32) a. You may eat three apples
b. You may eat two apples

The decreasingness effect is predicted as a result of the presence of the permission operator and the execution-based sequence semantics for actions. We say that an action β is an extension of or encompasses an action α ($\alpha \leq \beta$) iff $\tau(\alpha) = \{\sigma_i | \exists\sigma_j \in \tau(\beta)$ such that σ_i is a subsequence of $\sigma_j\}$. Then, from the above definition and the semantics of the weak permission operator the following theorem can be proven:

Fact 6: $\alpha \leq \beta \wedge \pi\beta \models \pi\alpha$

This captures the intended inference in (32), but would erroneously predict that in (33) below, the speaker is also granting permission to write one essay, instead of taking the midterm. The special reading of (33) we call a "package deal" reading. In other words, the addressee is granted permission to perform an action in which he writes two essays instead of taking the midterm. This effect blocks the decrasingness property.

(33) Instead of taking the midterm you may write two essays

Another problem for some analysis of deontic sentences is that they validate the inference from (34a) to (34b). Nevertheless, this does not present any problem for the semantics that we are developing, because $\alpha \rightarrow \Diamond\beta$ does not entail $\Diamond(\alpha;\beta)$ in DAS.

(34) a. If you commit a traffic violation, then you may appeal it in court.
b. You may commit a traffic violation and appeal it in court.

When an imperative expression and a proposition are connected by the connectives *and/or*, the second conjunct is interpreted as a repercussion of the compliance (35a) or as a repercussion of the failure to comply (35b) with the command in the first conjunct.

(35) a. Go to San Francisco and Jane will be happy
b. Go to San Francisco or Jane will be unhappy.

The translations of the sentences in (35) into our language are as follows:

(36) a. $\Box Go\ to\ San\ Francisco \wedge Happy(Jane)$
b. $\Box Go\ to\ San\ Francisco \vee Unhappy(Jane)$

The above formulas have as their unique interpretation a "repercussive" one. In other words, according to the update semantics of $\wedge$, the proposition *Jane will be happy* is interpreted in the state resulting from updating *s* with the command *Go to San Francisco*. Similarly, the semantic clause for $\vee$ yields either the set of worlds in which the command is satisfied or the worlds resulting from interpreting the proposition *Jane will be unhappy* in a state in which the addressee is allowed not to go to San Francisco.

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Do I Sound "Asian" to You?: Linguistic Markers of Asian American Identity

David B. Hanna

1. Background

A popular topic among young Asian Americans[1] is whether certain members of the group sound "Asian" or not, suggesting that there may be perceptible differences in their English speech. This group, which is the fastest growing minority in the United States today, is heterogeneous in that its members comprise several different ethnic groups, each with different cultures and traditions. More importantly, their parents' languages originate from a host of different language families. Yet they also share common experiences, such as growing up in a bicultural world and facing the same types of prejudices. While assimilation into the majority white American culture has become the dominant pattern, these experiences have also caused many Asian Americans, especially those in the second generation, to network with each other and unite in various ways, socially and politically (Espiritu, 1992). There is some evidence that such social networks may affect their speech patterns and others' perceptions of their speech. By identifying what is involved in such changes, this research can assist in understanding the social processes that lead to linguistic variation and change.

Extensive research of the phonological, morphological, and syntactic patterns of African Americans and Hispanic Americans over the past 30 years has shown that for these two groups, ethnic background is responsible for dialect boundaries (Labov, *et al.*,

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[1] For the purposes of this paper, the term "Asian American" will refer to persons of East or Southeast Asian descent who were born in the United States. This includes persons who claim Chinese, Filipino, Japanese, Korean, Taiwanese, or Thai ancestry. The usage of the term "Asian American" often relates to those of South Asian descent as well, such as persons of Indian or Pakistani ancestry, but they are omitted from this study to restrict the number of variables. Their omission is not a claim that they are not Asian American but is purely a methodological judgment.

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1968; Ornstein-Galicia, 1981). The non-standard dialects of African American Vernacular English and Hispanic English have evolved, distinct from both standard American English or any local white American vernacular spoken in a given area. African American Vernacular English has been attributed partially to the migration of black speakers to the northern cities of the United States from the South after World War II, and Hispanic English is largely influenced by Spanish. On the other hand, most white ethnic groups have experienced a rapid assimilation to the local vernacular speech of their communities (Laferriere, 1979). Thus, some immigrants have "melted" at a faster rate than other into the white majority, historically following strong racial and ethnic boundaries.

Relevant research on the speech patterns of American-born Asians has been comparatively lacking; the little work that has been found in the literature deals with Japanese Americans in California. Addressing a study on Japanese American language behavior from the 1940s (Spencer, 1950), Mendoza-Denton and Iwai (1993) studied generational differences between second generation and fourth generation Japanese Americans. They concluded that while second generation Japanese Americans retained certain features from the substrate (Japanese) language, these features disappeared in fourth generation Japanese Americans, whose English has converged with that of the matrix dialect. They attribute these differences to changes in identity and social networks of the Japanese American community.

The Japanese Americans of the Mendoza-Denton and Iwai study are markedly different from the children of the post-1965 immigrants of the current study, however, in that the speakers that they dealt with have been in the United States for several generations. Moreover, as they settled, they became "the target of US governmental efforts to weaken and disperse their community" during World War II. This served to hasten their assimilation into white American society. The Asian American members of the present study, on the other hand, are second generation Asian Americans whose parents arrived in the country under more flexible social conditions for racial minorities. In addition, they have different linguistic histories by which to be influenced. Language is a strong factor in cultural identity, and some Asian Americans of the current group retain their identity by being bilingual in English and their parents' native tongue. Others speak only English.

spkr	ethnicity	place of residence	sex	age	2nd lang.	other comments	AC	WC	avg	diff
1	Filipino, Thai	Cherry Hill NJ; Washington Twp. NJ	F	15	N/A	Friends mostly non-Asian	69	40	54	29
2	white	Ft. Washington PA;Ambler PA	F	20	N/A		90	83	87	7
3	white	Glen Mills PA	M	20	N/A		50	38	44	12
4	Korean	Audobon PA; Gladwynne PA	M	18	Korean	Friends mostly Asian	61	67	64	-6
5	white	NE Philadelphia	M	22	N/A		79	72	75	6
6	Taiwanese	Cherry Hill	M	14	Taiwanese	Friends mostly Asian	90	83	87	7
7	Korean	Korea (until age 2), Cherry Hill	F	15	Korean	Friends mostly Asian	93	90	92	3
8	white	NE Phila.; Bensalem PA	F	19	N/A		80	83	82	-3
9	Chinese	NE Phila.; Chinatown-Phila.	F	20	Cantonese	Went to Chinese grade school	60	50	55	10
10	Korean	Phila.; Voorhees NJ	F	16	N/A	Lives with white stepmother; Friends mostly non-Asian	57	74	65	-17
11	white	Bensalem	M	18	N/A		67	60	64	7
12	Filipino	Cherry Hill	M	16	N/A	Friends mostly Asian	73	47	65	17
13	Chinese	Cherry Hill	M	21	Mandarin	Until grade 6, friends mostly non-Asian;after, mostly Asian	43	43	43	0
14	Chinese	Lower Gynedd PA	M	21	Mandarin	Friends mostly non-Asian	42	47	45	-5
15	white	NE Phila.	F	18	N/A		48	57	53	-9
16	Chinese	Boston (until age 2); Voorhees; Cherry Hill	M	21	Mandarin*	Friends mostly Asian	86	97	91	-11
17	Filipino	South Phila.	F	21	N/A	Friends mostly non-Asian	47	30	38	17
18	white	Berlin NJ	F	17	N/A		80	73	77	7
19	white	Narberth PA	M	20	N/A		80	73	77	7
20	Chinese	West Phila.; Ft Washington	F	20	Mandarin*	Friends in h.s. mostly Asian	40	47	43	-7

AC = % of Asian Americans identifying speaker correctly; avg. = total % of judges identifying speaker correctly; diff. = AC minus WC; h.s. = high school; N/A = not applicable; WC = % of whites identifying speaker correctly; * = lost fluency.

Table 1. Biographical and linguistic data for each speaker. Penultimate 3 columns show calculated percentages of the two judge groups in identifying the race of the speaker correctly. Last column shows the difference between the two groups.

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This paper explores people's perceptions of Asian American speech as well as the question of whether second generation Asian Americans are distinguishable from those of the majority population. It is hypothesized that people can distinguish between Asian Americans and white Americans. If it is established that there does exist something different from the majority population, two possible routes these patterns could take are the retention of certain features from their parents' native language for several generations before assimilation, like pre-World War II Japanese American immigrants, or the creation of distinct new patterns, like in African American Vernacular English and Hispanic English.

2. Method

A number of field methods have been developed since the early 1960s in sociolinguistic research. The experiment uses what Labov (1984) calls the "family background" test, which attempts to gauge judges' sensitivity to markers of ethnic identity and stimulate research to determine what those features are.

Speech samples of 12 second generation Asian American (6 male, 6 female) and 8 Caucasian American (4 male, 4 female) native English speakers were recorded using a Sony TC-142 tape recorder. The Asian American subjects consisted of 5 Chinese Americans, 3 Korean Americans, 2 Filipino Americans, 1 Taiwanese American, and an individual of Filipino and Thai ancestry. In order to keep regional dialect differences to a minimum, only speakers who grew up in the Philadelphia area were selected. The speakers ranged from 13 to 23 years of age and consisted of students recruited from local schools known to have a relatively high percentage of Asian or Pacific Islander students (Cherry Hill High School East, Cherry Hill, NJ, 17%; Eastern Regional High School, Voorhees, NJ, 13%; University of Pennsylvania, Philadelphia, PA, 23%)[2] and personal contacts of the author. Table 1 gives more detailed biographical and linguistic information. The high school students in the study were approached at their school at the end of the day and interviewed about random topics such as their childhood experiences or their friendship circles, in order to facilitate their most natural voice. If they were Asian American, they were also asked questions about growing up as an Asian American, to get further feedback on the topic.

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[2] Individual figures were attained by calling the administrative offices of the respective schools. As a point of reference, Asians and Pacific Islanders made up 2.9% of the population of the United States in 1990, according to the U.S. Bureau of the Census.

Speech samples were transcribed and analyzed for common phonological features. Certain passages from each speaker, controlled for content, were randomly spliced together to create the family background test, consisting of the 20 speakers (see Figure 1). 60 judges (30 Asian American, 30 Caucasian American)[3], of ages 15 through 30, were then recruited to listen to the 20 passages and make judgments as to the ethnic identity of each speaker. Judges were told that each speaker is a native speaker of English who grew up in the Philadelphia area and were asked to identify each speaker as either white or Asian. In addition, they were asked to state what cues, if any, they used to distinguish between the groups.

3. Results

It was hypothesized that the judges would be able to distinguish between the Asian American speakers and their white American counterparts. Scores for both the Asian American and white judges were calculated by the percentage of speakers the judges correctly identified. The Asian American judges correctly distinguished between the two groups 67% of the time (± 11%), while the whites had a 63% success rate (±10%). These numbers were compared with a population mean of 50%, assuming that if the judges were randomly guessing, they would be correct 50% of the time. A hypothesis-testing method using the t distribution ($a = .001$) supports the hypothesis that both sample groups, Asian American and white, have a higher success rate than random guessing. The results sup-

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[3] From this point, the Asian American and white individuals who were interviewed and had samples of their speech recorded for the ethnic background test will be referred to as "speakers" ($n_1 = 12$, $n_2 = 8$), while the Asian Americans and whites who participated in identifying the speakers will be referred to as "judges" ($n_1 = 30$, $n_2 = 30$), to avoid any confusion between the two samples.

Asian-American identification test

age: _ **gender:** M F **date:** ______

race: Asian black native American white other ___

ethnic background: ____________________________

place(s) of residence up to age 13: _____________

native language(s): ____________________________

The people on the tape are native speakers of English raised in the Philadelphia area whose ages range from 13-23. They are either white or Asian. Please circle which race you think each speaker is.

1.	white	Asian	11.	white	Asian
2.	white	Asian	12.	white	Asian
3.	white	Asian	13.	white	Asian
4.	white	Asian	14.	white	Asian
5.	white	Asian	15.	white	Asian
6.	white	Asian	16.	white	Asian
7.	white	Asian	17.	white	Asian
8.	white	Asian	18.	white	Asian
9.	white	Asian	19.	white	Asian
10.	white	Asian	20.	white	Asian

Did the content of the passages affect any of your answers? If so, please explain.

Were there any cues that you used to distinguish between the Asians and the non-Asians?

Other comments appreciated:

Thank you!

Figure 1. Questionnaire form for the family background test

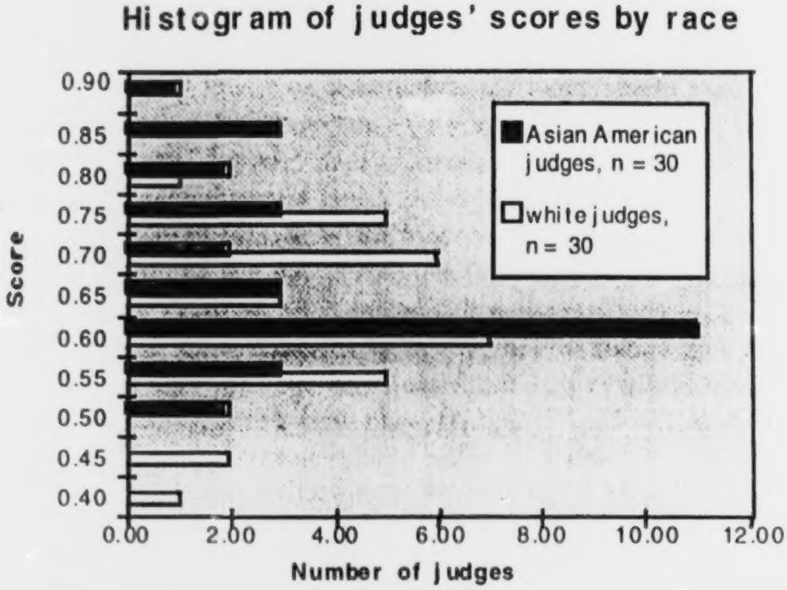

Figure 2. Histogram showing each judge group's score on the Asian American identification test by percentage. (For Asian American judges, n = 30, μ = 67%, σ = 11%. For white judges, n = 30, μ = 63%, σ = 10%.)

port the claim that both groups can distinguish between Asian Americans and white Americans to a degree.

Figure 2 shows a histogram breaking down each judge group's score by percentage. It appears from the figure that the Asian Americans performed slightly better in distinguishing between the groups. A χ^2 test of independence found differences not to be statistically significant, however, so it may be that any linguistic cues that each judge group used to distinguish between ethnic groups were the same. In other words, ethnic group of the judges was not a statistically significant factor in determining overall which of the speakers are Asian American and which are white. This may have been due to the fact that the judges were all members of the University of Pennsylvania community, which has a high percentage of Asian Americans. It is nonetheless possible that some degree of special sensitivity exists on the part of the Asian

American judges, resulting in their slightly higher success rate overall.

A more important conclusion to make results from a breakdown of the questionnaire by speaker, which shows that certain speakers were more easily identified than others by the judges (see Table 1). Specifically, speakers 6, 7, and 16 were most distinguishable as Asian American, chosen 87%, 92%, and 91% of the time, respectively, while speakers 2 and 8 were overwhelmingly chosen as white by the two groups, with rates of 87% and 82%, respectively. In addition, certain Asian American speakers were systematically judged randomly by both the Asian American and white judges, such as speakers 13, 14, 17, and 20, who were correctly identified only 43%, 45%, 38%, and 43% of the time, respectively.

4. Discussion

The study was initiated as a result of casual observations by myself and my Asian American peers that there are Asian Americans who have unique sound patterns that are shared by other Asian Americans. Some judges felt that if an Asian American grows up speaking English, he or she should sound no different from others of the same geographical area. These respondents also felt that they were randomly guessing when taking the test.

While some claimed that they were guessing randomly as to the ethnic background of the speakers, the data shows otherwise. Many of the judges in this study, especially those who are Asian American, supported the initial hypothesis. One Filipino American female judge in particular, who had been mentioned previously to the author as someone who was particularly accurate in distinguishing Asian Americans from other Americans, for example, on the phone, proved her excellence in this skill by scoring 85%. Her boyfriend, who took the test at the same time as she did, performed even better, scoring 90%. These results are strong indications that differences in language behavior exist. Both judges, however, could not identify how they distinguished between the two groups, but only that there is a clear difference.

The speakers who were more easily identified than others tended to socialize more with other Asians (see Table 1). Speaker 16, a 21 year old Chinese American male from Cherry Hill, New

Jersey who is also fluent in Mandarin, was correctly identified by 86% of Asian Americans, and by 97% of whites. He was also identified by the aforementioned female judge as being obviously "Asian" sounding. Speaker 7, a 15 year old Korean American female from Cherry Hill fluent in English and Korean, also was more readily identified, by 93% of Asian Americans and 90% of whites. One cue that many of the Asian American judges mentioned noticing in the speech of Asian Americans, both in the test and among their friends, was a high rising pitch movement at the ends of statements, variously described as "upspeak", an "upward lilt", and "lack of assertiveness". In several of the statements included in the family background test, the two previously mentioned speakers make extensive use of high rising intonation. Figure 3 shows examples of fundamental frequency (F0) spectrums of their utterances obtained from interviews with the judges. Similar F0 patterns were observed in the passages used for the test.

Previous studies of intonation and attitude in American English (Watt, 1990; McLemore, 1991), as well as a report in the popular media in 1994 ("What teens are saying?", *The Philadelphia Inquirer*), have mentioned such intonation patterns in the speech of adolescents and, to varying degrees, in the speech of other individuals. Watt describes this intonational contour as a hybrid of a concave final rise in a complex contour. He accounts for it partly "by the function of marking continuation in narration, and hence, a signal of turn maintenance, and partly by the function of eliciting hearer supplementation in the form of back channel feedback".

The speech samples of the two speakers make liberal use of this intonational technique. Since both speakers claim to associate primarily with other Asian Americans in their social groups, it is possible that the high rising intonation at the ends of statements may be one of the patterns that Asian Americans use when speaking to one another in their social networks. Unique suprasegmental features have been previously recognized in African American Vernacular English (Tarone, 1973), and so it is possible that distinctive Asian American suprasegmental features are taking shape. However, it may be the case that the cause of this contour in their speech is due to their membership as adolescents. A third possibility is that Asian Americans may be making use of the contour at a greater rate than the young people of other ethnic backgrounds. That peo-

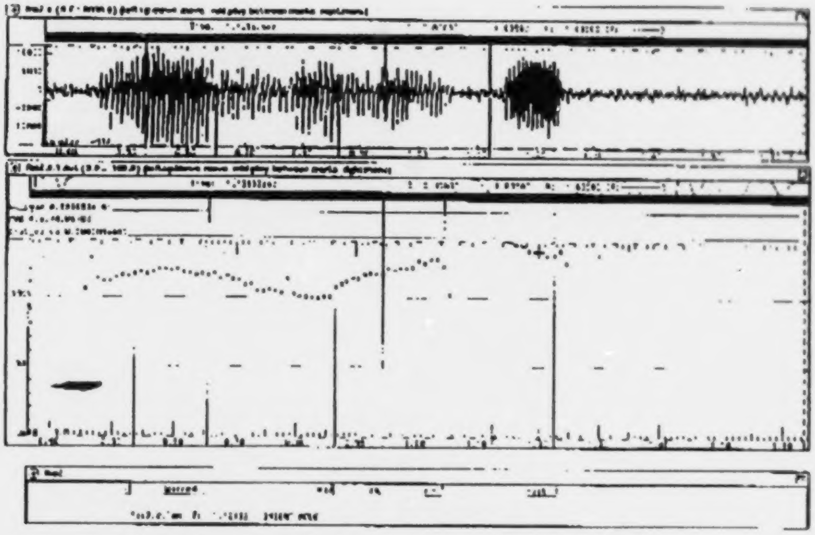

Figure 3a. Speaker 16: "I learned Mandarin first."

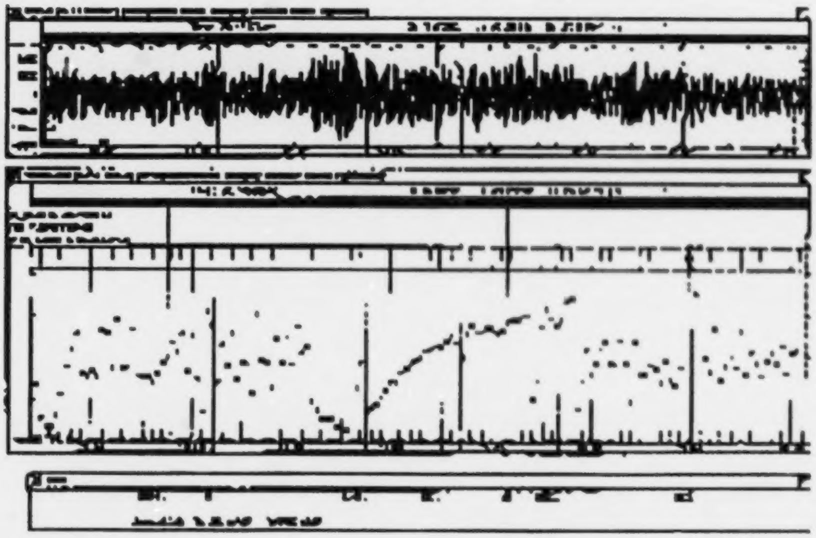

Figure 3b. Speaker 7. "She's a quarter American."

Figure 3. F0 spectrums, measured in Hz, showing the L*H intonation contours described by Watt (1990) and McLemore (1991) and displayed by certain Asian American speakers. Note the significant difference in amplitude in the final step. The top picture for each example is a waveform of the passage, the middle picture shows the fundamental frequency, and the bottom picture is a transcription of the passage.

ple have noted it as a particularly Asian American characteristic lends greater support to the first and third possibilities. At the present time, the high rising contour seems a good candidate for a pan Asian American marker of ethnic identity. Further analysis into this phenomenon is in progress.

Other features that were mentioned by the speakers as particularly Asian American cues included "increased pauses between words" and "jerkier speech". They also mentioned that they thought the Asian Americans used more "filler material" in their sentences, such as words like "umm" and "like". All of these features seem to address issues of confidence on the part of the speaker. Whether these are actual features on the part of the speakers or simply subjective reactions of the judges is a complex matter to assess, and may involve elements of both.

Another finding is that that Asian American judges seemed to be able to identify monolingual Asian American speakers better than whites could (speakers 1, 12, and 17), but identified bilingual Asian Americans at a similar rate to whites (speakers 4, 6, 7, 9, 13, 14, 16). These observations suggest that Asian Americans may have a greater sensitivity to distinguishing other Asian Americans, because they are more involved in intra-Asian American social networks and thus come into contact with other Asian Americans more often than the white Americans do. The L*H intonation was only observed in speaker 1 in these monolingual examples, and so it still must be realized what other cues Asian Americans may be using to identify them. The Asian American judges' similar performance to white Americans in distinguishing bilingual Asian Americans might be explained by the more easily discernible L*H intonation in their voices or possibly by interference from the Asian language in the bilinguals, causing the differences between these Asian Americans speakers and their white American counterparts.

The monolingual Asian American speakers who were more distinguishable to the Asian American judges all happen to be of Filipino descent, and so an alternate view is that Asian American judges may be able to pick out Filipino American speakers better than the white judges can. It is possible that Filipino Americans have some feature specific to them which makes them more readily recognizable to other Asian Americans, but this observation may be entirely coincidental.

The trend of identification differences between monolingual and bilingual Asian Americans is reversed for speaker 10. The data in Figure 1 for speaker 10, a 16 year old English speaking Korean American female who lives in Voorhees with her white stepmother, and keeps mostly non-Asian friends, show that whites actually identified her better than the Asian Americans did. Since it is hypothesized that Asian American language behavior stems from social interaction with other Asian Americans, it follows that most people would identify her as white when hearing her voice, since it is not influenced by other Asian Americans as much.

The question remains, do I sound Asian to you? The preliminary data presented in this paper support the hypothesis that some Asian Americans have distinctive linguistic features that are reinforced by social interactions with the same ethnic group. The present study attempted to gather data from a wide range of Asian Americans to stimulate research into more specific features. The diversity of the sample group proved to make the process fairly complex, but was necessary to characterize such a heterogeneous group. One possible direction to explore is the study of a larger sample group of Asian Americans who associate primarily with other Asian Americans to look at their suprasegmental features. The present experiment was performed in Philadelphia; it would be of interest to perform a similar study on the West Coast, where there are a greater number of Asian American ethnic enclaves. A claim of one Taiwanese American female judge from Voorhees, New Jersey who spent a summer in Berkeley, California that "[Asian Americans] speak totally different there" supports such a prospect. The subject is exciting because it is a group in which changes are in progress, due in large part to the constant influx of new Asian Americans into the United States. Sociolinguistic research should delve further into the speech patterns of this understudied group to more fully characterize this phenomenon and to uncover the trends of a rapidly changing and significant part of the American population.

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Subcategorization Semantics and the Naturalness of Verb-Frame Pairings

Edward Kako

1. Introduction

Do subcategorization frames have meanings independent of the verbs which appear in them? Advocates of the Projectionist position have answered "no" to this question, arguing that subcat frames serve only to satisfy the structural demands imposed upon sentences by the semantics of verbs (e.g., Chomsky, 1981; Pinker, 1989; Levin, 1993). Proponents of the Constructionist position, by contrast, have answered "yes" to this question, arguing that whether a verb and frame can peaceably cohabit in a sentence depends upon whether the two are "compatible" (e.g., Goldberg, 1995).

There are at least two compelling reasons to believe the Constructionist position. The first has to do with verb learning. In many cases, children can't acquire verb meanings just by pairing phonological forms with simultaneous events: Verbs are often uttered when the events they label are not happening (Gillette, Gleitman, Gleitman & Lederer, forthcoming); some events, like thinking, can't be observed at all (Gleitman, 1990); and many events can be labeled by two different verbs, depending upon perspective (e.g., *buy/sell*; Fisher, Hall, Rakowitz & Gleitman, 1994). Learners can use subcat frames to overcome these problems, to "bootstrap" their way into verb meanings when observation proves inadequate (Gleitman, 1990). To take a simple example, a child who hears the novel verb *gorp* in the sentence *Go gorp your truck to Grandma* can infer from its appearance in the dative frame that it likely involves transfer. What *sort* of transfer the child can't know without additional information. But having even this abstract sense can give the learner a substantial leg up in her efforts to fix the word's meaning.

The second reason to believe the Constructionist position comes from comprehension. Adult comprehenders often encounter novel verb-frame pairings which they interpret with little or no difficulty. Consider the two examples below:

(1) It would be fascinating if adolescents were able to make telephone handsets rocket off their cradles just by thinking at them.
(Carl Sagan, *The Demon-Haunted World*, 1996)

(2) We are screamed into submission by the music.
(Frank DeFord, NPR's *Morning Edition*, 11/15/95)

The verb *think* is not typically a verb of contact, and *scream* is not typically a verb of causation. But when inserted into the frames above (the conative and transitive, respectively), they assume these new meanings. According to the Projectionist line, comprehenders should balk at these innovations precisely because the verbs are put to such extraordinary uses. All the comprehender can do is to look up all meanings of the verb and check to see which meaning would project the attested frame. If no such meaning exists, comprehension ought to fail; the mismatch between verb and frame should prove disastrous. And yet it does not, suggesting that the needs of the verb are not the only ones that matter; indeed, comprehenders take quite seriously the interpretive demands imposed by the frame.

Recent psycholinguistic evidence further supports the Constructionist position. Naigles, Fowler and Helm (1992), for instance, have found that young children interpret novel verb-frame pairings in accord with the demands of the frame, rather than those of the verb. When given a set of toys and instructed to act out the sentence *The zebra goes the lion*, for example, preschoolers make the zebra push the lion rather than make the zebra go *to* the lion (on the plausible assumption that the preposition had somehow been deleted). Since adults never use *go* with this meaning, the causal component could have come only from the frame.

Fisher (1994) has demonstrated a similar finding for adults: When asked to paraphrase dative sentences containing verbs not licensed for that structure (e.g., *Mary thought the book to John*), the vast majority of subjects offered responses including some form of transfer (e.g., "Mary made the book go to John through some kind of mind power."); since *think* does not have this property, it could have come only from the frame.

If subcat frames have meanings of their own, two things ought to be true. First, adult speakers should be able to define these meanings. And second, the naturalness of a verb-frame pairing should depend in large measure on the semantic overlap between the two. The closer in meaning the two are, the more natural their pairing should be.

2. Experiment One

How does one ask adult speakers to define subcat frames? One possibility is to ask for paraphrases (e.g., "Tell me what *The rom gorped the blickit to the dax* means"), but responses are highly variable and extraordinarily difficult to code. In order to produce useful data, subjects must have guidance. I thus surveyed the literature on the lexical semantics of verbs – in particular, Jackendoff (1983), Levin (1993) and Pinker (1989) – and assembled a promising set of syntactically relevant semantic properties. Adopting a method developed by Gleitman, Gleitman, Ostrin and Miller (Gleitman, Gleitman, Miller & Ostrin, 1996) to study symmetrical verbs, I then presented these properties as questions to be answered about the verbs in various subcat frames – e.g., "Does *verbing* involve someone or something moving?"

2.1. Method

2.1.1. Subjects

Fourteen undergraduates at the University of Pennsylvania participated for credit in an upper-level psychology course. All were native speakers of English.

2.1.2. Materials

Subjects were given, in a printed packet, a set of six sentences, each with nonsense words in the open-class positions, and each with a different subcat frame: intransitive (*The filp tigged*), intransitive with a prepositional phrase (*The bilp fridded to the aggit*), transitive (*The grack mecked the zarg*), dative (*The rom gorped the blicket to the dax*), sentence complement (*The riff pimmed that the zuff would* *seb*), and noun phrase plus sentence complement (*The zill ormed the crug to prit*). Following each sentence, subjects answered (on the same page, right below the sentence) a series of questions about the meaning of the novel verb. Table 1 below presents the complete list of questions.

For each question subjects had to answer either "yes" or "no"; across questions, they were permitted to give either answer as often as they saw fit.

2.1.3. Procedure

Before beginning, subjects read instructions which told them they would be answering questions about sentences with made-up words. They were told that while they would not know exactly what the sentences were about, they should nonetheless have "a rough idea." Subjects were also instructed to answer based on what the sentence told them, rather than on what they might imagine to be true.

Table 1: List of questions subjects were asked about the nonsense verbs in Experiment One.

Does verbing involve someone or something...?
changing location?
exerting force on someone or something else?
changing possession (being transferred)?
making physical contact with someone or something else?
changing appearance?
being created?
perceiving or sensing something?
having a thought, idea, etc.?
communicating something?
emitting light or sound?
being changed in some way (physically)?
moving in some way?
wanting something?
causing something to happen?
enabling something to happen?
preventing something from happening?

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2.2. Results

Despite the oddity of this task, subjects had little difficulty identifying the semantic properties of subcat frames, answering in ways one would expect given previous work in lexical semantics. Table 2 presents the results, with the proportion of "yes" responses converted to plus and minus symbols for ease of presentation.

A couple of examples illustrate the systematicity of subject responses. For the dative frame, subjects assented to the properties CHANGE OF LOCATION, TRANSFER, MOTION, and CAUSATION, but rejected (among others) the properties MENTAL ACTIVITY and PERCEPTION. For the sentence complement frame, conversely, subjects assented to PERCEPTION, MENTAL ACTIVITY and COMMUNICATION, but rejected (among others) CHANGE OF LOCATION, FORCE, and CAUSATION.

Table 2: Results of Experiment One, showing proportion of subjects answering YES, categorized as follows:
– – < .10; – < .30; + > .70; + + > .90

	I	I-PP	T	Dat	SC	NP-S
change of location		–	–	+	– –	–
force		–	+ +		– –	
transfer	–	–	– –	+	– –	–
contact	–	–	+ +		– –	
change of appearance		–		–	–	– –
creation	–	– –	–	– –	–	– –
perception	–	– –	–	– –	+ +	– –
mental		–	–	–	+ +	– –
communication			–		+	
emission of light/sound			–	– –	–	– –
physical change		–		–	–	
motion	+	+		+	– –	
wanting	–	– –	–	– –		– –
causing	–			+ +	–	
enabling	–	–	–		–	
preventing	–	–	–	–	–	

I = intransitive; I–PP = intransitive plus PP; T = transitive;
Dat = dative; SC = sent comp; NP–S = NP plus sent comp

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2.3. Discussion

The results of this experiment confirm Prediction 1: Adult speakers of English can, with guidance, define the meanings of subcat frames, even when the frames lack open–class content. Exactly **how** subjects do so is not clear. They could be reading semantic properties directly from the frames, or they could be "looking up" the verbs which appear in them, and then reading the properties from the verbs. The answer bears directly on the debate between Projectionism and Constructionism; I return to this important issue in the General Discussion.

3. Experiment Two

On the Projectionist position, verbs place strict demands on the shapes that sentences can take; subcat frames exist only to reflect the underlying semantics of verbs. If subcat frames have independent meanings, we might expect them to place demands of their own on sentences. More specifically, we might expect them to require that the verbs which appear with them be similar in meaning.

In order to test this prediction, I had to (a) identify the meanings of some real verbs to complement the frame meanings identified in Experiment 1; (b) collect judgments about how naturally these verbs and frames go together; and (c) quantify the degree of verb–frame overlap for the different pairings. I could then use the overlap measure to predict the naturalness judgments.

Note that because phases (a) and (b) are intermediate steps, and not experiments in and of themselves, I will report only on the methods of these phases, and not on the results. The only result I will report is from using semantic overlap to predict naturalness.

3.1. Phase One: Identifying the Semantics of Real Verbs

3.1.1. Method

3.1.1.1. Subjects

Twelve undergraduates at the University of Pennsylvania participated for credit in an introductory psychology course. All were native speakers of English.

3.1.1.2. Materials

Subjects were presented, in a written packet, with 12 real verbs of English, two each from six well–known semantic classes: Perception (*see, listen*), Cognition (*think, know*), Communication (*tell, promise*), Motion (*jump, run*), Transfer (*send, give*), and Causation (*throw, push*). Following each verb, subjects saw the same questions as did the subjects in the Frame Properties task of Experiment One (see Table 1 for list). Once again, they had to answer "yes" or "no" to each.

3.1.1.3. Procedure

Subjects were told that they would be answering questions about the meanings of verbs in their language.

3.2. Phase Two: Judgments of Verb–Frame Naturalness

3.2.1. Method

3.2.1.1. Subjects

Eight undergraduates at the University of Pennsylvania participated for credit in an upper–level psychology course. All were native speakers of English.

3.2.1.2. Materials

The six subcat frames used in the Frame Properties tasked were "crossed" with the 12 verbs used in the Verb Properties task, resulting in 72 different verb–frame pairings. All content words except the main verb were converted to nonsense, yielding sentences like *The rom thought the blickit to the dax*. Subjects rated the naturalness of these pairings on a scale of one to seven, one being "awful," four being "somewhat strange," and seven being "natural." Nonsense words did not repeat. The sentences were presented nine per page, arranged such that contiguous sentences never had the same subcat frame, or verbs from the same semantic class.

3.2.1.3. Procedure

Before beginning, subjects read instructions which told them they would be rating the naturalness of sentences whose main verbs were real but whose other words were made–up. They were told to ignore the nonsense words as much as possible and to focus on how good the verb sounded in the sentence as a whole.

3.3. Phase Three: Calculating Verb–Frame Overlap

To calculate the semantic overlap between a given verb and frame, I used the following equation:

$$\sum_{i=1}^{16}\left(\%\mathrm{YES}_{\mathrm{Prop\,N,\ Frame\,X}} - \overline{\%\mathrm{YES}}_{\mathrm{Frame\,X}}\right)\left(\%\mathrm{YES}_{\mathrm{Prop\,N,\ Verb\,Y}} - \overline{\%\mathrm{YES}}_{\mathrm{Verb\,Y}}\right)$$

The equation above looks at each of the sixteen semantic properties and checks to see whether the verb and frame "agree," where agreement can mean either that both *possess* the property, or that both *lack* the property. A frame (or verb) possesses a property if the percentage of "yes" responses given to that property exceeds the average percentage of "yes" responses across all properties for that frame; conversely, a frame lacks a property if the percentage of "yes" responses given to that property is less than the average percentage of "yes" responses across all properties for that frame. Thus a property which registers as "above average" for a particular verb or frame will have a positive value in the equation above, while a property which registers as "below average" will have a negative value. If a verb and frame agree on a property, the polarity on either side (positive or negative) will be the same, and the product of these values will be positive; if they disagree, their polarities will differ, and the product will be negative. When these products are summed over all sixteen properties, the resulting value reflects the total overlap between verb and frame. A large positive value reflects strong agreement, while a large negative value reflects strong disagreement.

3.4. Results

The correlation between naturalness ratings and verb–frame overlap is 0.50. How do we interpret this value? Is it small or large? Correlations can range in (absolute) value from 0 to 1, where 0 indicates no relationship at all, and 1 represents a perfect relationship. Thus a value of 0.50 represents a moderately strong relationship between semantic overlap and naturalness. Another way to interpret this value is to consider that the square of the correlation represents the amount of variance in naturalness accounted for by semantic overlap. In this case the square of the correlation is 0.25, meaning that 25% of the variance in naturalness ratings can be attributed to the semantic overlap between verb and frame.

3.5. Discussion

While the relationship between semantic overlap and naturalness is meaningful, it is also far from perfect. If frame meanings are as critical as I have suggested, why is the correlation not higher? There are at least three reasons: (1) my tasks neglect some critical semantic properties; (2) frame polysemy creates the appearance of mismatches where none exist; and (3) some facts about subcat behavior can't be reduced to semantics at all.

3.5.1. Properties not accounted for

Consider the two verb–frame pairings below, both of which were presented to subjects in the Verb–Frame Judgment task:

(3) The rom listened that the dax would seb.
(4) The rom saw that the dax would seb.

According to subjects in the Verb Properties task, *listen* and *see* have identical semantic profiles: Both are verbs of PERCEPTION. And since subjects in the Frame Properties task also attributed PERCEPTION to the sentence complement frame, (3) and (4) should both sound natural. But (3) sounds decidedly worse than (4). Why? The answer is that perception takes more than one form; it can be either passive (as with *see*) or active (as with *listen*). Verbs of PASSIVE PERCEPTION take sentential complements, whereas verbs of ACTIVE PERCEPTION take PP complements (as in *The rom listened to the dax*). Why this should be so is not entirely clear. What **is** clear is that I've neglected a difference that makes a difference, thereby deflating the overall correlation between overlap and naturalness.

Another semantic property neglected in this work is aspect. It's become increasingly apparent over the last few years that aspect plays a critical role in the subcat system (Hoekstra, 1992; Tenny, 1994; van Hout, 1996). Consider the following two sentences, both seen by subjects in the Verb–Frame Judgment task:

(5) The rom thought the blickit to the dax.
(6) The rom knew the blickit to the dax.

Even though neither of these sentences sounds especially natural (except, perhaps, in a world with ESP), (6) sounds much worse than (5). Why should this be, given that both *think* and *know* involve MENTAL ACTIVITY? The answer is that *think* and *know* differ in aspect: The first is active, the second stative. Because of the event structure it encodes, the dative frame demands that its main verb be an activity (van Hout, 1996). But because my properties assessment tasks don't account for aspect, they underestimate the mismatch between verb and frame in (6).

3.5.2. Frame polysemy

The number of semantic classes far outnumbers the number of subcat frames, forcing frames to assume multiple meanings. Responses in the Frame Properties task suggest that subjects were sensitive to frame polysemy. Given the sentence complement frame, for instance, subjects assented both to PERCEPTION and to COMMUNICATION—mutually exclusive options. The semantic overlap between the sentence complement frame and, say, *think* appears lower than it actually is because subjects have attributed to the frame a property they have not attributed to the verb. But in reality no mismatch exists; *think* may **select** one meaning of the SComp frame over others, but selection is quite different from mismatch.

3.5.3. Syntactic idiosyncrasy

While the subcat system hinges in crucial ways on the meanings of verbs and frames, it nonetheless cannot reduce to semantic facts alone. Consider the sentence

(7) The rom knew the blickit.

Subjects in the Verb-Frame Judgment task rated this sentence as highly natural, even though *know* and the transitive are, according to the properties assessment tasks, badly mismatched. The fact that *know* can take an NP as its complement appears to be a syntactic fact, inexplicable on purely semantic grounds (Grimshaw, 1979). Syntactic idiosyncrasies of this sort reduce the overall correlation between overlap and naturalness.

4. General Discussion

The findings I've reported here falsify a strong version of Projectionism, one which denies that meaning could ever be extracted from subcat frames alone. But a weaker version of Projectionism is still defensible. Perhaps comprehenders extract meaning from a subcat frame by running their grammars in reverse, isolating one or more verbs known to appear in that frame, and then reading the relevant properties off the verbs. This position, which I'll call "Reverse Projectionism," closely approximates Constructionism, as it too can explain the phenomena which motivate the claim of subcat meanings.

Their many similarities aside, Reverse Constructionism and Projectionism imply different lexico-syntactic architectures. Under Reverse Projectionism, subcat frames don't "own" their semantic properties, but can only borrow them from their lexical allies. Comprehension of lexical innovations would thus entail the access of appropriate verbs. If so, this access process should reveal itself in on-line processing experiments. One might expect, for instance, that access time would vary with the number of verbs a frame takes: the larger the set, the longer the access time. If, however, subcat frames do own their semantic properties, as Constructionism asserts, we should see no such difference. Future work will help to tease these possibilities apart.

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Extraction, Gradedness, and Optimality*

Frank Keller

1. Introduction

Recently, a number of researchers have proposed the use of experimental methods to elicit acceptability judgments, thus addressing the shortcomings of the conventional intuitive way of gathering linguistic data (cf. Bard et al. 1996; Cowart 1997; Schütze 1996). The use of experimental methods allows us to handle inter- and intraspeaker variation and to control for known biases on judgment behavior (cf. Schütze 1996). An experimental approach seems particularly important for the study of linguistic phenomena that involve degrees of grammaticality, and recently, several experimental investigation of gradedness have become available (cf. Cowart 1994; Keller 1996a,b; Neville et al. 1991).

The assumption that degrees of grammaticality are relevant to linguistic theory dates back to Chomsky (1964), and on an informal level, graded data are regularly used to support linguistic hypotheses (cf. Schütze 1996 for an extensive discussion). A standard case is the claim that subjacency violations result in only mild deviance, while ECP violations cause strong ungrammaticality. Belletti and Rizzi's (1988) influential study of psych-verbs builds on this assumption, making use of no less than seven levels of acceptability. However, Belletti and Rizzi's treatment of graded data is very casual and provides "no general theory of which principles *should* cause worse violations. The theory makes no prediction about the relative badness of, say, θ-Criterion versus Case Filter violations, let alone about how bad each one is in some absolute sense. The notion of relative and absolute badness of particular violations is ad hoc, and is used in just those cases where it is convenient" (Schütze 1996: 43).

This seems to be a typical case: even though the existence of graded data and their potential relevance for linguistic research seems to be generally acknowledged, hardly any effort has gone into the theoretical investigation of graded grammaticality, and none of the established grammatical frameworks offers a systematic account

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of graded data. The present paper tries to address this problem by proposing a framework for graded grammaticality based on Optimality Theory, relying on the concept of ranked grammatical constraints that is independently motivated in Optimality Theory. In this model, the ranking of constraints induces a ranking of linguistic structures, and degrees of grammaticality emerge as a property of suboptimal structures.

We use this framework to develop an account for gradedness in extraction from picture NPs, showing in detail how graded data can be exploited for testing linguistic hypotheses. Our account is based the experimental data for picture NP extraction presented by Keller (1996a,b).

2. Extraction and Gradedness

Complex NPs are standardly assumed to be islands for extraction. Picture NPs, however, constitute well-known counterexamples to this assumption, as they allow for island violations in certain cases. Kluender (1992) provides a comprehensive survey of the relevant extraction data, explicitly acknowledging its graded nature, but drawing on intuitive evidence only. Keller (1996a,b) presents the results of an experimental study investigating gradedness in picture NP extraction, thus testing the theoretical claims by Kluender and others.

Kluender (1992) claims that extractability depends on the specificity of the picture NP and observes that acceptability gradually decreases from (1a) to (1e):

(1) a. Who did you see pictures of?
b. Who did you see *a* picture of?
c. Who did you see *the* picture of?
d. Who did you see *his* picture of?
e. Who did you see *John's* picture of?

Definiteness and number are among the factors that determine the specificity of an NP. Keller (1996a,b) found that the definiteness (but not the number) of the picture NP has a significant effect on acceptability. A similar specificity effect is reported by Cowart (1997: ch. 1) and Neville et al. (1991).

Extractability also depends on the semantics of the matrix verb. Aspectual class seem to be a main factor here: state verbs are more acceptable than activity verb (cf. (2a)), while for achievements and accomplishments, a verb of creation is more acceptable than a verb of destruction (cf. (2b,c)). Keller (1996a,b) reports significant acceptability differences for all pairs in (2).

(2) a. Who did you *have/analyze* a picture of?
b. Who did you *take/destroy* a picture of?
c. Who did you *find/lose* a picture of?

The third significant factor is the referentiality of the extracted NP. Here, the experimental data reveals the following hierarchy, with acceptability decreasing from (3a) to (3d):

(3) a. *Who* did you take a picture of?
b. *Which man* did you take a picture of?
c. *What* did you take a picture of?
d. *How many men* did you take a picture of?

The account of gradedness in extraction developed in this paper is based on data from an experimental study investigating the acceptability of extraction from picture NPs (cf. Keller 1996a,b for a detailed description). This study used magnitude estimation experiments as proposed by Bard et al. (1996) to obtain graded linguistic judgments from nineteen native speakers of English. Significant effects were found for definiteness, verb class, and referentiality. All acceptability ratings given in the following sections are taken from this study and constitute the geometrical means of the responses from all subjects.

3. Gradedness and Optimality

3.1. Standard Optimality Theory

Standard Optimality Theory (OT, Grimshaw 1995; Prince and Smolensky 1993) is set up as a declarative, constraint-based grammar theory with the following basic assumptions:

(4) *Basic Assumptions of Optimality Theory*
a. Constraints can be violated.
b. Constraints are hierarchically ordered.
c. In all languages, the same constraints apply. Cross-linguistic variation is due to variation in the constraint hierarchy (re-ranking of constraints).

d. A structure is grammatical if it is the optimal structure from a set candidates for a given input.

OT specifies a generation function GEN which generates a set of candidate structures (the reference set) for a given input representation. The input representation is a predicate-argument structure that has to be realized by the candidate structures (cf. section 4.1.1). An output structure is assigned to the input I as the result of an optimization process over the candidate structures for I. More precisely, the output S_{opt} for an input I is the optimal structure in the reference set $R = \text{GEN}(I)$, where optimality is defined as follows:

(5) *Optimality*

a. A structure S_i is optimal for a reference set R if, for every structure $S_j \in R$, S_i satisfies A_j better than S_j, where A_j is the highest-ranking constraint on which S_i and S_j conflict.

b. Two structures S_i and S_j conflict on a constraint A if one of them satisfies A better than the other.

c. A structure S_i satisfies a constraint A better than a structure S_j if either
   i. S_i satisfies A and S_j violates A, or
   ii. S_j violates A more often than S_i.

An optimality theoretic grammar for a given language L has to be constructed such that, for every input I, the output structure $S_{\text{opt}} \in \text{GEN}(I)$ is the grammatical realization of I in L. To achieve this, an OT grammar specifies a set of universal grammatical constraints along with a set of language-specific constraint rankings. Note that OT differs from more traditional grammar frameworks in that the grammaticality of a structure is not determined by its inherent properties, but by the set of structures it competes with.

3.2. Suboptimality and Gradedness

Standard OT assumes that all non-optimal candidates are equally ungrammatical, which leads to a binary notion of grammaticality. We propose to drop this assumption and argue for an extended version of OT that assigns each candidate a grammaticality rank relative to its competitors. In this model, the degree of grammaticality of a candidate is computed according to the standard definition of optimality in (5), i.e., based on the number and ranks of the constraints it violates.

This extension of OT can be implemented by introducing the notion of *suboptimality*, which is then used to define the relative grammaticality of a structure:

(6) *Suboptimality*
A structure S_i is suboptimal with respect to a structure S_j if there are subsets R_i and R_j of the reference set such that S_i is optimal for R_i and S_j is optimal for R_j and $R_i \subset R_j$ holds.

(7) *Grammaticality*
A structure S_i is less grammatical than a structure S_j if S_i is suboptimal with respect to S_j.

This definition generalizes the standard OT notion of grammaticality: in standard OT, grammaticality is defined as global optimality for the whole reference set, while extended OT defines grammaticality as local optimality (suboptimality) relative to a subset of the reference set. It follows that the grammaticality rank of a structure corresponds to its harmony, i.e., the optimality theoretic rank in the candidate set.

3.3. Predictions

By generalizing the predictions of standard OT, we arrive at a grammar model that makes clear empirical claims for graded data. While a standard OT grammar makes predictions of the form: structure S_i is grammatical, but structure S_j is ungrammatical, our extended version of OT predicts that structure S_i is more grammatical than structure S_j. This prediction can be tested experimentally by eliciting graded acceptability judgments: it is confirmed if the mean acceptability ranking for S_i is significantly higher than the one for S_j.

More generally, an extended OT grammar predicts a grammaticality hierarchy for the candidate structures in a given reference set. Since the grammaticality hierarchy is computed from the constraint rankings in the grammar, evidence for these rankings can be obtained by testing the predicted grammaticality hierarchy against the empirically found acceptability hierarchy for the candidate set. Hence extended OT allows to exploit evidence from suboptimal candidates: the correct prediction of the grammaticality hierarchy for a full set of suboptimal candidates constitutes considerably stronger evidence for a particular constraint ranking than the prediction of only the optimal (fully grammatical) candidate in standard OT.

Furthermore, suboptimal candidates allow the detection of hidden re-rankings: is possible that the re-ranking of a constraint does not affect the optimal candidate of a given candidate set, and hence remains invisible in standard OT (at least for this candidate set). In most cases, however, a hidden re-ranking has an impact on some of the suboptimal candidates, and hence can be detected in extended OT.

The next section gives a detailed example for the application of extended OT and the use of suboptimal candidates as linguistic evidence.

4. Optimality and Extraction

4.1. Theoretical Assumptions

4.1.1. Input

We follow Legendre et al. (1995a) in assuming that the input for constraint evaluation is specified as a predicate-argument term with scope marking (cf. Grimshaw 1995 for an alternative view). Scope is indicated by an operator (e.g., Q for questions) which is coindexed with a variable bearing the corresponding syntactic feature (e.g., [+wh] for *wh*-phrases). We adopt this input format and add the assumption that the input does not specify lexical material for predicates and arguments, but only provides category information. The lexical material, together with lexically triggered features, is filled in by the generation function GEN. This is crucial in accounting for lexical contrasts (e.g., the definiteness effect or the main verb effect in extraction), as it allows for candidates with different lexicalizations to compete, given that they share the same predicate-argument specification.[1]

The following input representation is assumed for a *wh*-question extracted from a picture NP:

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[1] Note that the problem of accounting for lexical contrasts is not specific to our version of OT, but also arises in standard OT as put forward, e.g., by Grimshaw (1995). It is an instance of a more general problem: how can a structure be ungrammatical in the absence of a grammatical competitor? (Cf. Legendre et al. 1995a for a solution.)

(8) Q_i [NP_{Subj} V [NP_{Pict} x_i[+wh]]]

In (8), the scope of the *wh*-phrase is marked by the chain $\langle Q_i, x_i[+wh]\rangle$. The phrases NP_{Subj} and NP_{Pict} (subject and picture NP) are unspecified and have to be filled with lexical material by GEN. Note that lexical insertion can introduce additional syntactic features (e.g., [±def] to mark definiteness), thus requiring the generation of further operators to bind them.

4.1.2. Constraints

Our account is based on the cross-linguistic account of *wh*-extraction put forward by Legendre et al. (1995a,b), which we extend to accommodate extraction from picture NPs. In the following, we state the part of their constraint inventory that is relevant to our analysis.

FAITHFULNESS is a family of constraints requiring that a candidate structure realizes (parses) the input as accurately as possible. Only one faithfulness constraint is relevant here:

(9) *Faithfulness*
PARSE(F): $\langle Op_i, x_i[F]\rangle$ must be parsed

(9) states that an operator-variable chain in the input has to be realized by the parse, which can be achieved either by movement or by scope marker insertion. In our analysis, (9) can be instantiated as PARSE(wh) and PARSE(def).

Selection is regulated by the SUBCAT constraint, which requires that the specification in the subcategorization frame of a lexical entry has to be met by the subcategorized element:

(10) *Subcategorization*
SUBCAT: subcategorization requirements must be met

The distribution of chains is restricted by the MINIMALLINK (MINLINK) family of constraints. MINLINK requires chains to be minimal, i.e., to consist of links that cross as few barriers as possible. (Legendre et al. (1995a) assume Chomsky's (1986) definition of barrier.) A separate set of constraints exists for non-referential chains (marked [−ref]) as opposed to referential ones. MINLINK is implemented as:

(11) *Minimal Link*
  a. BAR^{n}: a chain link must not cross n barriers
  b. BAR$^{n[-\mathrm{ref}]}$: a [−ref] chain link must not cross n barriers

The desired minimality effect is achieved by arranging the subconstraints of MINLINK in the universal constraint subhierarchy in (12):[2] the more barriers a chain violates, the less harmonic it is. Note further that non-referential chains are universally less harmonic than referential ones.

(12) *Universal Rankings*
  a. BAR$^{n} \gg$ BAR^{n-1}
  b. BAR$^{n[-\mathrm{ref}]} \gg$ BAR$^{n-1[-\mathrm{ref}]}$
  c. BAR$^{n[-\mathrm{ref}]} \gg$ BAR^{n}

Another set of constraints regulates the distribution of traces and empty operators:

(13) *Traces and Operators*
  a. *t: no traces
  b. *Op: no empty operators

The constraints in (13) have the effect that traces or operators reduce the harmony of a parse, and hence candidates with fewer traces or operators are preferred.

4.1.3. Rankings

Legendre et al. propose the following English-specific rankings for the constraints (9)–(11) and (13) (in addition to the universal rankings in (12)):

(14) *Rankings for English*
SUBCAT $\gg$ *Q $\gg$ BAR$^{3[-\mathrm{ref}]} \gg$ PARSE(+wh) $\gg$ BAR$^{2[-\mathrm{ref}]} \gg$ BAR$^{1[-\mathrm{ref}]} \gg$ BAR$^{4} \gg$ BAR$^{3} \gg$ BAR$^{2} \gg$ BAR$^{1} \gg$ *t

Our account leaves this hierarchy intact, but adds some new rankings to locate additional constraints.

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[2] $A_i \gg A_j$ indicates that the constraint A_i is ranked higher than the constraint A_j.

4.2. Extraction from Picture NPs

4.2.1. Definiteness

The experimental data presented by Keller (1996a,b) shows that extraction from indefinite picture NPs is significantly more acceptable than from definite ones, cf. the ratings in (15).[3]

(15) a. Which man did you take a picture of? 49.39
b. Which man did you take the picture of? 43.74

To account for this definiteness effect, we propose to integrate Diesing's (1992) analysis of indefinite NPs into the account of *wh*-extraction by Legendre et al. (1995a,b). Diesing's treatment of indefinites is part of a more general theory of the syntax-semantics interface, in which the mapping between scoped syntactic structures (LF representations) and quantified semantic representations is reduced to the following simple mechanism:

(16) *Mapping Hypothesis*
Material from VP is mapped into the nuclear scope.
Material from IP is mapped into a restrictive clause.
(Diesing 1992: 15)

In Diesing's approach, presuppositional material has to be mapped into the restrictive clause of a quantifier to be interpreted correctly. Definite NPs are presuppositional, and hence have to undergo this mapping. Diesing assumes that Quantifier Raising (QR) applies at the level of LF and adjoins definite object NPs to IP, from where they are then mapped into the restrictor via (16). Indefinite NPs, on the other hand, are ambiguous between a presuppositional and an existential reading: presuppositional indefinite objects are raised to IP (just like definites), whereas existential ones stay within VP and are mapped into the nuclear scope to receive an existential closure interpretation.

We propose to recast the basic insight of Diesing's approach to scope assignment in OT. As OT is a monostratal framework that does not assume the level of LF, we cannot stipulate that NPs are adjoined to VP or IP via QR. Instead, we assume a mapping operator M that correlates with a feature [±def]. This feature instantiates the PARSE(F) constraint (cf. (9)), requiring the chain $\langle \mathrm{M}_i, x_i[\pm\mathrm{def}]\rangle$ to be parsed. We stipulate that M has to adjoin to IP for [+def] NPs, and to VP for [−def] ones, thus marking the scope of the NP in accordance with (16). Parsing can be achieved either by moving the NP to scope position (which is a crosslinguistic option, cf. section 4.3.2), or by leaving the NP in situ and realizing M as an empty operator. The former option results in a chain $\langle \mathrm{NP}_i, \mathrm{t}_i\rangle$ and violates *t, the latter produces a chain $\langle \mathrm{M}_i, \mathrm{NP}_i\rangle$ and violates *M, an instantiation of *Op. Furthermore, we have to assume that the Mapping Hypothesis applies to material chain-linked to VP or IP, instead of applying to material within VP or IP.

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[3] The numbers we give are experimentally determined mean acceptability ratings, cf. section 2.

As an example consider tableau 1, which gives the candidate set for a picture NP in a non-extraction configuration.[4] (Our tableaux are set up such the rank of the constraints decreases from left to right, while the harmony of the candidates decreases from top to bottom.) Note that both candidates in tableau 1 have the same constraint profile, violating *M and BAR^1 (as the chain $\langle \mathrm{M}_i, \mathrm{NP}_i\rangle$ crosses the barrier VP). In extended OT, this predicts that both candidates are equally acceptable (which is trivially true).

	[NP$_{\text{Subj}}$ V [NP$_{\text{Pict}}$ NP]]	B 1	*t	*M
a.	[$_{\text{IP}}$ you took [$_{\text{VP}}$ M$_j$ [$_{\text{VP}}$ [$_{\text{NP}_j[-\text{def}]}$ a picture of Mary]]]]	*		*
b.	[$_{\text{IP}}$ M$_j$ [$_{\text{IP}}$ you took [$_{\text{VP}}$ [$_{\text{NP}_j[+\text{def}]}$ the picture of Mary]]]]	*		*

Tableau 1: Unextracted definite vs. indefinite picture NPs

Now consider tableau 2, which gives the candidate set for extraction from a picture NP, as generated from the input in (8). We assume the ranking *t $\gg$ *M, thus predicting that the insertion of an empty operator M is favored over movement. Hence, the [±def] NP stays in situ, which correctly captures the facts for English (but cf. 4.3.2 for crosslinguistic data). Furthermore, tableau 2 relies on the assumption that M turns the projection it adjoins to into a barrier. (Diesing (1992: 130) makes a similar assumption in postulating that adjunction to IP creates a barrier at LF.) For candidate (b), this means that IP is a barrier for the chain ⟨*which man*$_i$, t$_i$⟩, thus incurring a violation of BAR^2. In candidate (a), however, M adjoins to VP, which is an inherent barrier anyway, and hence only a violation of BAR^1 ensues. The resulting constraint profile predicts that extraction from indefinite picture NPs is more grammatical than from definite ones, which is in line with the data in (15).

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[4] As indefinite NPs are ambiguous between a presuppositional and an existential reading, they can be marked [+def] or [−def]. Presuppositional indefinites are ignored here, as they behave analogously to definites.

	Q$_i$ [NP$_{\text{Subj}}$ V [NP$_{\text{Pict}}$ x_i[+wh]]]	BAR		*t	*M
		2	1		
a.	[$_{\text{CP}}$ which man$_i$ did [$_{\text{IP}}$ you [$_{\text{VP}}$ M$_j$ [$_{\text{VP}}$ take [$_{\text{NP}_j[-\text{def}]}$ a picture of t$_i$[+wh]]]]]]		**	*	*
b.	[$_{\text{CP}}$ which man$_i$ did [$_{\text{IP}}$ M$_j$ [$_{\text{IP}}$ you [$_{\text{VP}}$ take [$_{\text{NP}_j[+\text{def}]}$ the picture of t$_i$[+wh]]]]]]	*	*	*	*

Tableau 2: Extraction from definite vs. indefinite picture NPs

4.2.2. Verb Class

The experimental findings of Keller (1996a,b) showed that extraction from [+creation] verbs like *take* is significantly more acceptable than from [−creation] verbs like *destroy*. In addition, it was found that the effect from verb class decreases acceptability more than the definiteness effect, cf. the following ratings:

(17) a. Which man did you take a picture of? 49.39
b. Which man did you take the picture of? 43.74
c. Which man did you destroy a picture of? 41.01
d. Which man did you destroy the picture of? 36.94

To account for the effect from verb class, we follow Diesing (1992: 120ff) in assuming that a [−creation] verb like *destroy* selects a presuppositional reading for its object NP. In OT, this can be implemented by assuming that a [−creation] verb subcategorizes for a [+def] NP. The feature [+def] has to be linked to IP via chain formation, resulting in the desired presuppositional interpretation of the NP. It follows that the SUBCAT constraint is violated in (17c), as the object NP does not meet the [+def] specification. If we now assume that SUBCAT outranks BAR^2, then the contrast between (17b) and (17c) is explained.

However, (17d) is less acceptable than (17c), even though (17d) contains a [+def] NP, and hence does not violate SUBCAT. This contrast seems to be due to extraction: the unextracted version of (17d) is fully acceptable. Hence, in analogy to the contrast in (15), the decrease in acceptability in (17d) seems to be caused by the extraction chain $\langle$*which man*$_i$, t$_i\rangle$, which we assume to incur an additional barrier violation in (17c,d). It is unclear how this additional violation comes about. A possible explanation is that barrierhood correlates with feature selection: *destroy* selects the feature [+def] for its object NP, and hence turns it into a barrier for $\langle$*which man*$_i$, t$_i\rangle$. Then (17c) violates BAR^2, while (17d) violates BAR^3, which we assume to outrank SUBCAT. However, this assumption contradicts Legendre et al.'s ranking of SUBCAT in (14). This can be resolved by stipulating different subconstraints of SUBCAT for feature selection (as in our case) as opposed to category selection (as in Legendre et al.'s case). It is intuitively plausible that violations of feature selection (violations of SUBCAT(F)) are less serious and cause a smaller degree of ungrammaticality.

Our overall ranking then yields the candidate set in tableau 3, which correctly reflects the ranking of the examples in (17) (violations of *t and *M are irrelevant and thus omitted).

	Q$_i$ [NP$_{\text{Subj}}$ V [NP$_{\text{Pict}}$ x_i[+wh]]]	B	SC	BAR	
		3	F	2	1
a.	$[_{\text{CP}}$ which man$_i$ did $[_{\text{IP}}$ you $[_{\text{VP}}$ M$_j$ $[_{\text{VP}}$ take $[_{\text{NP}_j[-\text{def}]}$ a picture of t$_i$[+wh]]]]]]				**
b.	$[_{\text{CP}}$ which man$_i$ did $[_{\text{IP}}$ M$_j$ $[_{\text{IP}}$ you $[_{\text{VP}}$ take $[_{\text{NP}_j[+\text{def}]}$ the picture of t$_i$[+wh]]]]]]			*	*
c.	$[_{\text{CP}}$ which man$_i$ did $[_{\text{IP}}$ you $[_{\text{VP}}$ M$_j$ $[_{\text{VP}}$ destroy$_{[+\text{def}]}$ $[_{\text{NP}_j[-\text{def}]}$ a picture of t$_i$[+wh]]]]]]		*	*	*
d.	$[_{\text{CP}}$ which man$_i$ did $[_{\text{IP}}$ M$_j$ $[_{\text{IP}}$ you $[_{\text{VP}}$ destroy$_{[+\text{def}]}$ $[_{\text{NP}_j[+\text{def}]}$ the picture of t$_i$[+wh]]]]]]	*			*

Tableau 3: Interaction of definiteness and verb class

4.2.3. Referentiality

The experimental data showed that extraction from picture NPs is significantly more acceptable if the extracted *wh*-phrase is referential (such as *which man*), rather than non-referential (such as *how many men*):

(18) a. Which man did you take a picture of? 49.39
b. How many men did you take a picture of? 38.02

This acceptability difference follows directly from Legendre et al.'s hypothesis that non-referential chains are universally less harmonic than referential ones (cf. (12c)). If we now extend the candidate set in tableau 3 to contain both referential and non-referential picture NPs and adopt Legendre et al.'s English-specific rankings for $\text{BAR}^{n[-\text{ref}]}$ and BAR^{n} in (14), then we obtain the constraint profile in tableau 4. The grammaticality hierarchy predicted by this profile can be tested against the experimental data of Keller (1996a,b) in (19).

(19) a. Which man did you take a picture of? 49.39
b. Which man did you take the picture of? 43.74
c. Which man did you destroy a picture of? 41.01
d. Which man did you destroy the picture of? 36.94
e. How many men did you take a picture of? 38.02
f. How many men did you take the picture of? 30.56
g. How many men did you destroy a picture of? 20.15
h. How many men did you destroy the picture of? 18.54

Note that the acceptability hierarchy in (19) reflects the grammaticality hierarchy in tableau 4 almost perfectly (apart from the candidates (d) and (e), which are in the wrong order). This constitutes strong evidence for the rankings that we have assumed in sections 4.2.1 and 4.2.2, as well as for Legendre et al.'s rankings in (12) and (14).

4.3. Predictions

4.3.1. Stage/Individual-Level Predicates

So far we have only considered a narrow range of data, viz., extraction from picture NPs (objects NPs). This section contains some proposals on how our representational version of the Mapping hypothesis (cf. (16)) can be used to deal with other data covered by Diesing (1992). She makes the following observation as to the behavior of indefinite subjects:

	Q_i [NP$_{\text{Subj}}$ V [NP$_{\text{Pict}}$ x_i[+wh]]]	BAR$^{[-\text{ref}]}$			B	SC	BAR	
		3	2	1	3	F	2	1
a.	[$_{\text{CP}}$ which man$_i$ did [$_{\text{IP}}$ you [$_{\text{VP}}$ M$_j$ [$_{\text{VP}}$ take [$_{\text{NP}_j[-\text{def}]}$ a picture of t$_i$[+wh]]]]]]							**
b.	[$_{\text{CP}}$ which man$_i$ did [$_{\text{IP}}$ M$_j$ [$_{\text{IP}}$ you [$_{\text{VP}}$ take [$_{\text{NP}_j[+\text{def}]}$ the picture of t$_i$[+wh]]]]]]						*	*
c.	[$_{\text{CP}}$ which man$_i$ did [$_{\text{IP}}$ you [$_{\text{VP}}$ M$_j$ [$_{\text{VP}}$ destroy$_{[+\text{def}]}$ [$_{\text{NP}_j[-\text{def}]}$ a picture of t$_i$[+wh]]]]]]					*	*	*
d.	[$_{\text{CP}}$ which man$_i$ did [$_{\text{IP}}$ M$_j$ [$_{\text{IP}}$ you [$_{\text{VP}}$ destroy$_{[+\text{def}]}$ [$_{\text{NP}_j[+\text{def}]}$ the picture of t$_i$[+wh]]]]]]				*			*
e.	[$_{\text{CP}}$ how many men$_i$ did [$_{\text{IP}}$ you [$_{\text{VP}}$ M$_j$ [$_{\text{VP}}$ take [$_{\text{NP}_j[-\text{def}]}$ a picture of t$_i$[+wh][−ref]]]]]]			*				*
f.	[$_{\text{CP}}$ how many men$_i$ did [$_{\text{IP}}$ M$_j$ [$_{\text{IP}}$ you [$_{\text{VP}}$ take [$_{\text{NP}_j[+\text{def}]}$ the picture of t$_i$[+wh][−ref]]]]]]		*					*
g.	[$_{\text{CP}}$ how many men$_i$ did [$_{\text{IP}}$ you [$_{\text{VP}}$ M$_j$ [$_{\text{VP}}$ destroy$_{[+\text{def}]}$ [$_{\text{NP}_j[-\text{def}]}$ a picture of t$_i$[+wh][−ref]]]]]]		*			*		*
h.	[$_{\text{CP}}$ how many men$_i$ did [$_{\text{IP}}$ M$_j$ [$_{\text{IP}}$ you [$_{\text{VP}}$ destroy$_{[+\text{def}]}$ [$_{\text{NP}_j[+\text{def}]}$ the picture of t$_i$[+wh][−ref]]]]]]	*						*

Tableau 4: Interaction of definiteness, verb class, and referentiality

(20) *Stage-Individual-Level Distinction*

> In a logical representation, bare plural subjects of stage-level predicates can appear either in the nuclear scope [. . .] or the restrictive clause [. . .]. Bare plural subjects of individual-level predicates can only appear in the restrictive clause.
>
> (Diesing 1992: 19)

Diesing assumes that stage-level (SL) and individual-level (IL) predicates differ syntactically in that their subjects are base-generated in Spec-VP and Spec-IP, respectively. The subject of an SL predicate moves to Spec-IP at S-structure, but it is optionally reconstructed to its base position in Spec-VP via LF-Lowering. By virtue of the Mapping Hypothesis, she then predicts that SL predicates, but not IL predicates, are ambiguous, as stated in (20).

A relevant example is the contrast in (21), which involves the SL predicate *available* and the IL predicate *intelligent*.

(21) a. Firemen are available.
b. Firemen are intelligent.

(21a) is ambiguous between an existential and a generic (presuppositional) reading, while (21b) only has the generic reading.

Under the assumptions we made about the representation of indefinites in OT (cf. section 4.2.1), this contrast follows straightforwardly. Consider the constraint profile for (21) in tableau 5. Here, as the subject of *available* is base generated in Spec-VP, well-formed chains can be generated for candidates (a) and (b), viz., $\langle M_j, NP_j, t_j \rangle$ and $\langle NP_j, M_j, t_j \rangle$, thus predicting that the indefinite can have both readings. For *intelligent*, however, the subject is base-generated in Spec-IP, resulting in the chains $\langle M_j, NP_j \rangle$ and $\langle NP_j, M_j \rangle$. The latter chain is ill-formed and hence violates PARSE(def), which we assume to outrank *t.

	$[\mathrm{NP}_{\mathrm{Subj}}\ \mathrm{V}\ \mathrm{AP}_{\mathrm{Pred}}]$	P def	*t	*M
a.	$[_{\mathrm{IP}}\ M_j\ [_{\mathrm{IP}}\ [_{\mathrm{NP}_j[+\mathrm{def}]}$ firemen] are $[_{\mathrm{VP}}$ intelligent]]]			*
b.	$[_{\mathrm{IP}}\ M_j\ [_{\mathrm{IP}}\ [_{\mathrm{NP}_j[+\mathrm{def}]}$ firemen] are $[_{\mathrm{VP}}\ t_j$ available]]]		*	*
c.	$[_{\mathrm{IP}}\ [_{\mathrm{NP}_j[-\mathrm{def}]}$ firemen] are $[_{\mathrm{VP}}\ M_j\ [_{\mathrm{VP}}\ t_j$ available]]]		*	*
d.	$[_{\mathrm{IP}}\ [_{\mathrm{NP}_j[-\mathrm{def}]}$ firemen] are $[_{\mathrm{VP}}\ M_j\ [_{\mathrm{VP}}$ intelligent]]]	*		*

Tableau 5: Stage-level vs. individual-level predicates

Hence tableau 5 correctly predicts the reading represented by candidate (d) to be dispreferred, and thus explains the contrast in (21).[5] Note that this explanation is arrived at without positing a separate level of LF along with additional mechanism like Quantifier Raising and LF-Lowering. We simply stipulate a mapping operator M, which is governed by independently motivated constraints on operators and chains in OT and allows the Mapping Hypothesis to apply on surface representations.

4.3.2. Crosslinguistic Data

OT is based on the crucial assumption that crosslinguistic variation is due to variation in the constraint hierarchy. Hence, if the proposed analysis is correct, we expect the same constraints that we have stipulated for English to hold for other languages, modulo potential constraint re-rankings.

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[5] The (d) reading is not excluded completely, as Diesing (1992) points out with reference to focus data.

Indeed, this seems to be the case. Consider the following German data presented by Diesing (1992: 37f):

(22) a. ... weil Professoren ja doch verfügbar sind.
since professors 'indeed' available are
'... since (in general) professors are available.'
b. ... weil ja doch Professoren verfügbar sind.
since 'indeed' professors available are
'... since there are professors are available.'

(23) a. ... weil Wildschweine ja doch intelligent sind.
since wild boars 'indeed' intelligent are
'... since (in general) wild boars are intelligent.'
b. *? ... weil ja doch Wildschweine intelligent sind.
since 'indeed' wild boars available are

Under the assumption that the particle *ja doch* marks the VP boundary, these data show that indefinite subject NPs in German move to IP to receive a generic interpretation (as in (22a), (23a)), while they stay within VP to receive an existential interpretation (which is possible for SL-predicates as in (22a), but not for IL-predicates as in (23a)). In English, in contrast, no overt movement (lowering) takes place, but a chain link is established to an empty operator in IP and VP, respectively.

This crosslinguistic fact can be accounted for straightforwardly by assuming that in German, the ranking $*M \gg *t$ holds, while English has the ranking $*t \gg *M$. This entails that German prefers movement (violating *t), whereas English prefers inserting an empty operator (violating *M). Under this assumption, we get the candidates in tableau 6 for the examples in (22).

5. Conclusion

This paper proposed an extended version of Optimality Theory as a model for graded grammaticality, based on the assumption that the harmony of a structure corresponds to its grammaticality. We showed that this framework can be used to account for gradedness in extraction from picture NPs based on experimental data. Our analysis explained the graded nature of extraction in terms of two constraints:

	[NP$_{\text{Subj}}$ V AP$_{\text{Pred}}$]	P def	*M	*t
a.	[$_{\text{IP}}$ [$_{\text{NP}_j\text{[+def]}}$ Professoren] [$_{\text{VP}}$ t_j verfügbar sind]]			*
b.	[$_{\text{IP}}$ [$_{\text{VP}}$ [$_{\text{NP}_j\text{[−def]}}$ Professoren] [$_{\text{VP}}$ t_j verfügbar sind]]]			*
c.	[$_{\text{IP}}$ M_j [$_{\text{VP}}$ [$_{\text{NP}_j\text{[+def]}}$ Professoren] verfügbar sind]]		*	
d.	[$_{\text{IP}}$ [$_{\text{VP}}$ M_j [$_{\text{NP}_j\text{[+def]}}$ Professoren] verfügbar sind]]		*	

Tableau 6: Movement vs. empty operator insertion in German

MINLINK and SUBCAT. Graded effects from violations of subjacency (MINLINK) are well known from the literature (cf. section 1). Graded effects from violations of selectional constraints (SUBCAT) are less well studied, but Chomsky (1965: ch. 4) proposes a framework where the degree of grammaticality of a structure depends on the type of selectional specification violated. Chomsky's approach is similar to our stipulation that the violation of a selectional feature like [+def] is less serious than the violation of a category specification in SUBCAT (cf. section 4.2.2).

Certainly, the results presented here are preliminary, and a broader range of linguistic phenomena has to be studied to show the viability of our approach. It would be particularly interesting to complement the judgment data used here by other types of experimental data, using paradigms such as event-related potentials (cf. Neville et al. 1991) and sentence matching (cf. Freedman and Forster 1985), which have been claimed to be relevant to grammaticality.

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A Non-Scalar Account of Apparent Gradience: Evidence from *Yo* and *Ne*

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1. Introduction

In Japanese, there is a set of lexical items called sentence-final particles (SFPs) which convey the speaker's attitude toward what is being said. SFPs do not contribute to the truth-conditional meanings of utterances. As can be seen in (1), all the sentences have the same truth-conditional meaning: they are true if Taroo has the property of singing well. But the SFPs in (1) are used to express different attitudes of the speaker.

(1) a. **yo**
Taroo wa uta ga umai *yo.*[1]
TP singing SB be good at
'Taro sings well, (I tell you).'

b. **zo**
Taroo wa uta ga umai *zo.*
'Taroo sings well, (damn it)!'

c. **wa**
Taroo wa uta ga umai *wa.*
'Oh, Taroo sings well.....'

d. **sa**
Taroo wa uta ga umai *sa.*
'Taroo sings well, (naturally).'

e. **ne**
Taroo wa uta ga umai *ne.*
'Taroo sings well, doesn't he?'

Since SFPs convey the speaker's attitude toward the utterance, and an utterance with a particular SFP is more appropriate in one con-

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[1] In this paper the following abbreviations are used: SB = subject, TP = topic, GN = genitive, COP = copula.

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text than another, pragmatic factors, such as beliefs, intentions, and goals, are essential in interpreting an utterance with SFPs.

Previous analyses of SFPs claimed that the difference among them lay in the degree of strength of the speaker's conviction toward the illocutionary force of the sentence to which they were attached (Uyeno:1971, Kendall:1985, Yoshimoto:1992). This paper discusses the problems of such scalar analyses and introduces an alternative approach in which the pragmatic principles that govern the use of each SFP are characterized independently.

2. Scalar analyses

When the speaker believes that the addressee has considered the proposition but believes it to be false, the speaker may want to convince the addressee that the speaker is right and the addressee is wrong. When the goal of the speaker is to convince the addressee that the speaker is right and the addressee is wrong, *yo* and *ne* appear to have the following contrasting effects. With *yo*, the speaker appears to be stating strongly to the addressee that he should believe the proposition, while with *ne*, the speaker appears to be suggesting hesitantly to the addressee the he should believe the proposition, as illustrated in (2).

(2) a. Kono zu no ichi wa guai warui *yo*.
this graph GN position TP convenience bad
The position of this graph is not good, *I tell you*.'

b. Kono zu no ichi wa guai warui *ne*.
'The position of this graph is not good, *don't you think?*'

This fact motivated scalar analyses like Yoshimoto (1992). Yoshimoto (1992) focuses on the difference between *yo* and *ne* and claims that *yo* strengthens the illocutionary meaning, while *ne* blurs the force of the utterance.

The scalar approach like Yoshimoto (1992) is problematic. 1) It stipulates where each particle is placed on a scale, and cannot explain why the particles are ordered that way as opposed to another. Thus, it cannot explain why *yo* seems to strengthen while *ne* seems to blur the illocutionary force. 2) It assumes that SFPs reflect the same attitude and differ only in the degree of strength of the illocutionary force. However, each particle reflects a different attitude, as will be shown in the following section.

This paper shows that *yo* and *ne* reflect different attitudes of the speaker. Yet, from the use conditions for *yo* and *ne*, the scalar relation follows that *yo* seems to strengthen and *ne* seems to blur the illocutionary force of stating or directing. Since the scalar relation follows from independent use conditions, the approach in which each SFP is characterized independently is more explanatory than the scalar analyses, which merely stipulate a scalar ranking.

3. Independent principle approach

I hypothesize that the use of *yo* and *ne* is governed by the principles in (3) and (4) respectively.[2]

(3) ***Yo*-principle**
The use of the particle *yo* reflects the speaker's belief that the addressee is NOT committed to the state of affairs denoted by the propositional content of the statement or directive preceding the particle.

(4) ***Ne*-principle**
The use of the particle *ne* reflects the speaker's belief that the addressee IS committed to the state of affairs denoted by the propositional content of the statement or directive preceding the particle.

Commitment is defined following Lu (forthcoming). When one is committed to something, one is willing to be held responsible for it. When making a statement or directive, the speaker is committed to the speech act, and thus, willing to be held responsible for making the statement or directive. Similarly, an addressee would be committed to, and thus, willing to be held responsible for:

A. a state of affairs denoted by the propositional content of a STATEMENT if the addressee believes the proposition expressed by the statement to be true.

B. a state of affairs denoted by the propositional content of a DIRECTIVE if the addressee believes the addressee will perform the action expressed by the directive.

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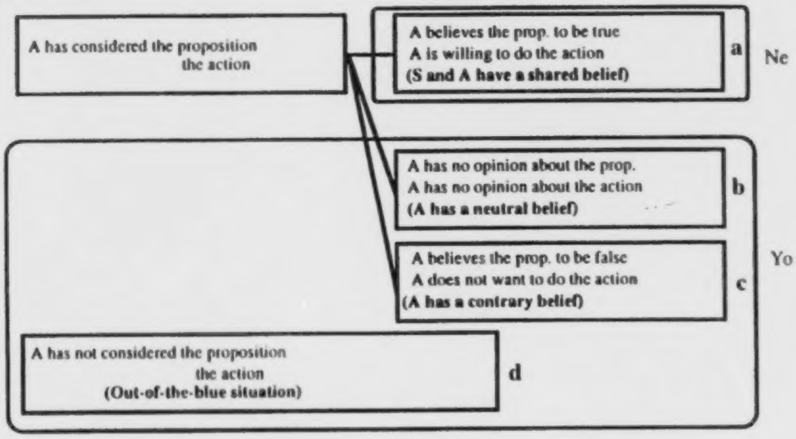
[2] For a discussion on the combined SFP *yone*, see Kose (in prep).

Since the *ne*-principle states that the speaker believes that the addressee *is* committed to the state of affairs denoted by the propositional content, the use of *ne* reflects the speaker's belief that 1) the addressee believes the proposition expressed by the statement to be true, *or* 2) the addressee is willing to perform the action expressed by the directive (Case a in (5)).

(5)


A has considered the proposition
the action
A believes the prop. to be true
A is willing to do the action
(S and A have a shared belief)
a
Ne
A has no opinion about the prop.
A has no opinion about the action
(A has a neutral belief)
b
A believes the prop. to be false
A does not want to do the action
(A has a contrary belief)
c
Yo
A has not considered the proposition
the action
(Out-of-the-blue situation)
d

Since the *yo*-principle, in contrast to the *ne*-principle, states that the speaker believes that the addressee is NOT committed to the state of affairs denoted by the propositional content, the use of *yo* reflects the speaker's belief that: 1) the addressee does not believe the proposition expressed by the statement to be true, OR 2) the addressee will not perform the action expressed by the directive. The claim that the addressee does not believe the proposition or will not perform the action refers to the following situations: 1) the addressee has not considered the proposition or the action (Case d in (5)), 2) the addressee has considered the proposition or the action but believes the proposition to be false or does not want to do the action (Case c), and 3) the addressee has considered the proposition or the action but has no opinion about them (Case b).

So, according to the independent principle approach, *yo* and *ne* reflect different attitudes of the speaker: The use of *yo* reflects the speaker's belief that the addressee is NOT committed to the propositional content, while the use of *ne* reflects the speaker's belief that the addressee IS committed to the propositional content. Thus, the independent principle approach predicts that *yo* and *ne* have different distributions. That is, there are situations where one particle can be used but not the other. On the other hand, the scalar approach like Yoshimoto (1992) predicts that *yo* and *ne* have the same distribution and the two differ only in the strength of the illocutionary force. Section 3 shows that the *yo*-principle and the *ne*-principle correctly predict that *yo* and *ne* have different distributions. It also shows that the two principles explain the effects of *yo* and *ne* that cannot be explained in terms of strengthening or weakening of the illocutionary force.

3.1. Out-of-the-blue situations

Since the speaker indicates with *yo* that he believes that the addressee does not believe the proposition or will not perform the directed action, *yo* can be used when the speaker believes that the addressee has not had chance to have any belief about the proposition or the directed action (i.e., in an 'out-of-the-blue' situation, Case d in (5)).

For example, a student A, who does not usually say anything when he comes back to his room, may say something with *yo* to his roommate B right after he comes home in order to catch B's attention, as in (6). Since A does not usually say anything, his friend B cannot have any belief about what A will say.

(6) Kyoo boku omoshiroi mono mita *yo*.
today I interesting thing saw
'*Hey*, I saw something interesting today.'

By using *yo*, the speaker highlights that there is a gap between what the speaker believes and what the speaker believes the addressee believes (i.e., the speaker believes the proposition, but the speaker believes the addressee has not considered the proposition). This act of highlighting the gap has the effect of catching the addressee's attention. Without *yo*, the student does not sound like he is trying to catch his roommate's attention and may sound like he is just talking to himself.

If the use of *ne* reflects the speaker's belief that the addressee believes the proposition to be true, *ne* will not be used when the speaker believes the addressee has not had a chance to consider the proposition. If the speaker believes the addressee has had no chance to consider the proposition, the speaker believes the addressee cannot have a belief about the truth of the proposition. Thus, the speaker will not think the addressee believes the proposition to be true. Thus in an out-of-the-blue-telling example (7), the speaker will not use *ne*, as in (7a), because he knows that his roommate has no way of knowing what he saw that day, and thus cannot believe whether he saw something interesting is true or not.

(7) a. #Kyoo boku omoshiroi mono mita *ne*.
today I interesting thing saw
'I saw something interesting today, *right?*'

b. Kyoo boku omoshiroi mono mita.
'I saw something interesting today.'

If *ne* is not used as in (7b), the speaker does not sound like he thinks the addressee knows that he saw something interesting, and is simply stating he saw something interesting that day. Thus, (7b) is appropriate in this situation.

3.2. Shared belief situations

The *yo*-principle states that the use of *yo* reflects the speaker's belief that the addressee does not believe the proposition expressed by a statement to be true. Thus, the *yo*-principle predicts that *yo* will not be used when the speaker believes that the addressee also believes that a proposition is true (i.e., the speaker and the addressee share a belief, Case a in (5)). For example, suppose the two students have walked several miles to get to their dormitory because they missed a bus, complaining to each other that they hate to walk such a long way. Since they share the belief that they walked a long way, they can say the following without *yo*, as in (8a).

(8) a. Kyoo wa takusan aruita.
today TP a lot walked
'We walked a lot today.'

B. #Kyoo wa takusan aruita *yo*.
'*But*, we walked a lot today.'
'*Hey*, we walked a lot today.'

If *yo* is used as in (8b), the speaker sounds like he thinks his friend does not think they have walked a long way. The speaker sounds like he believes the addressee believes the opposite of what he thinks (i.e., the addressee believes they did not walk a long way) or the addressee has no opinion about whether they walked a lot, or the addressee does not know anything about what the speaker is saying. Thus, the utterance with *yo* is appropriate when the speaker is trying to convince the addressee that they walked a lot that day. Also, the utterance with *yo* is appropriate when the speaker tells her friend in the dorm, who does not know at all about what happened to him.

Because the *ne*-principle states that the use of *ne* reflects the speaker's belief that the addressee believes the proposition, *ne* can be used if the speaker wants to represent himself as believing that the addressee believes the proposition. So, *ne* can be used in a shared-walk situation (9).

(9) Kyoo wa takusan aruita *ne*.
today TP a lot walked
'We walked a lot today, ***didn't we?***'

If *ne* is not used in (9), the speaker sounds like he simply blurted out what he is thinking without representing the sharedness between the speaker and the addressee.

The distributional difference between *yo* and *ne* in an out-of-the-blue situation and a shared belief situation cannot be explained if the two particles are considered to reflect the same attitude of the speaker, as assumed by the scalar analysis.

3.3. A sincere answer to a sincere question

The *yo*-principle and the *ne*-principle predict that *yo* can be used but *ne* cannot be used in answering a sincere wh-question in a sincere way. This section first discusses what the speaker is considered to believe when he gives a sincere answer to a sincere question. Then, it shows how the *yo*-principle and the *ne*-principle predict *yo* can be used but *ne* cannot be used in giving a sincere answer to a sincere question.

This section assumes that a wh-question expresses an open proposition that lacks an element. For example, the wh-question, 'What time is it?' is considered to express an open proposition, 'It is X o'clock', where X refers to what the questioner is asking for. A sincere answer to a sincere wh-question expresses a filled proposition. For example, an answer to the above question, 'It's nine o'clock.' expresses the filled proposition, 'It is nine o'clock.', where what the questioner asked for is filled in.

(10) a. What time is it? —>'It is X o'clock.'
(open proposition)

b. It's nine o'clock. —> 'It is nine o'clock.'
(filled proposition)

In answering a sincere wh-question like (10a), the answerer (the speaker) believes the questioner (the addressee) has considered the open proposition and expects a filled proposition, but does not know which of the possible filled propositions is true. Therefore, the answerer believes that the questioner is not committed to the filled proposition (i.e., the answerer believes that the questioner does not believe the filled proposition to be true).

Based on the above assumptions, the *yo*-principle predicts that *yo* can be used in giving a sincere answer to a sincere question: If the use of *yo* reflects the speaker's belief that the addressee does not believe the proposition to be true, *yo* can be used after a filled proposition constituting a sincere answer to a sincere question. Thus, *yo* can be used to tell a questioner who has asked what time it is, as in (11).

(11) X: Ima nan ji?
now what o'clock
'What time is it?'

Y: Ku ji da *yo*.
nine o'clock COP
'It's nine o'clock.'

In contrast, the *ne*-principle predicts that *ne* will not be used in giving a sincere answer to a sincere question. According to the *ne*-principle, by using *ne*, the speaker indicates that he thinks the addressee believes the proposition. Since the speaker indicates that he thinks the addressee already believes the proposition by using *ne*, *ne* will not be used in giving a sincere answer to a sincere question. Thus, in the same situation as (11), where the speaker tells the questioner who asked what time it is, the speaker will not use *ne*, as predicted.

(12) X: Ima nan ji?
now what o'clock
'What time is it?'

Y: #Ku ji da *ne*.
nine o'clock COP
'It's nine o'clock, *isn't it?*'

In some situations, however, *ne* can actually be used in giving a sincere answer to a sincere question. This fact motivated Hasunuma (1988) and Kinsui (1993) to change the hypothesis that has the condition that the use of *ne* indicates the speaker's belief that the addressee knows the proposition expressed by the speaker's utterance. However, the fact that *ne* occurs in giving a sincere answer to a sincere question can still be explained by the *ne*-principle, which has the condition that the speaker believes that the addressee believes the proposition. This is because the person whom the speaker is addressing by using *ne* can be the speaker himself. In other words, whom the speaker is addressing by using *ne* has to be inferred. Whom the speaker is looking at at the time of the utterance (whether the speaker is directly looking at the questioner's eyes or not) helps to understand whether the use of *ne* is directed toward the questioner or the speaker himself. If the speaker's use of *ne* is understood as directed toward the speaker himself, the speaker is considered to be interacting with himself while giving a sincere answer to the questioner.

Not only does the *ne*-principle predict that *ne* can be used in a sincere answer to a sincere question if it is inferred that *ne* is directed toward the speaker himself, but it also predicts with what kind of question the speaker may use *ne* in giving a sincere answer to a sincere question. If the speaker is understood as addressing himself when he gives a sincere answer to a sincere question, the speaker may use *ne* when he does not mind making it explicit that the speaker is interacting with himself when he answers to the questioner. Thus, the speaker will not use *ne* in answering a question that the speaker believes everyone believes he should be able to answer without conscious attention. For example, when the speaker is asked what his name is, as in (13), he is expected to be able to give an immediate answer.

(13) X: Anata no onamae wa?
you GN name TP
"What is your name?'

Y: #Nakamura Tarou desu *ne*.[3]
COP
'Nakamura Tarou, right?'

In answering questions like (13), it is predicted that the speaker will not use *ne*, because the use of *ne* makes it sound like the speaker has to ask for confirmation from himself about his own name. Since the use of *ne* in giving a sincere answer makes the speaker sound like he is not sure about it and needs to think about it, the use of *ne* in giving a sincere answer is appropriate in a situation where the speaker has amnesia and is not sure about his own name.

If it is inferred that the speaker is addressing himself when giving a sincere answer to a sincere question, the use of *ne* indicates that the speaker believes that the addressee (which is himself) believes that the proposition expressed by an answer to the question is true. Since the speaker indicates that he is interacting with himself, the use of *ne* is appropriate when the speaker is answering a question that he believes everybody believes he may have to think about before answering. For example, for questions that the speaker believes everyone believes would require the answerer to calculate something, to search his memory, or to find appropriate words to express what he thinks, the speaker thinks everyone thinks it is natural for him to think about the answer. When giving an answer to this kind of question, the speaker may use *ne* in giving a sincere answer to let the questioner know that he has to think about the answer. For instance, when a worker who has been working for a while is asked how long he has been working, he may use *ne* to let the questioner know he has to calculate, as in (14).

(14) X: Tsutomete nan nen me desu ka?
work what year th COP Q
'How long have you been working?'

Y: Kotoshi de jyuukyuunenme desu *ne*.[4]
this year 19th year COP
'(*Let me see...*) This is my 19th year.'

If *ne* is not used in Y's answer in (14), Y does not sound like he has to take time to calculate and sounds like he knows the answer off the top of his head.

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[3] This example is taken from Kinsui (1993).

[4] A similar example is in Kinsui (1993).

The *yo*-principle and the *ne*-principle can explain why *yo* occurs, but *ne* does not occur in giving a sincere answer to a sincere question when it is obvious that *ne* is directed toward the questioner. The *ne*-principle can also explain the fact that *ne* can be used in giving a sincere answer to a sincere question if the speaker does not mind indicating that he is interacting with himself when he answers the question. However, these facts cannot be explained if it is assumed that *yo* and *ne* reflect the same attitude and differ only in the strength of illocutionary force.

Section 3.1. through 3.3. showed that the differences in distribution and effects between *yo* and *ne* follow from the *yo*-principle and the *ne*-principle. However, these differences cannot be explained by a scalar approach that assumes that SFPs show the same attitude and differ only in the degrees of strength of the illocutionary force of the sentence. Therefore the scalar approach cannot correctly explain the uses of SFPs.

4. Different degrees of illocutionary force follow from the two principles

Section 3 presented cases where the distribution and the effects of *yo* and *ne* differ, and showed that SFPs reflect different attitudes of the speaker. Section 4 shows that even though SFPs show different attitudes, the facts that motivated scalar analyses follow from the two principles.

When the speaker believes that the addressee has considered the proposition or action but believes the proposition to be false or does not want to perform the action, the speaker may want to convince the addressee that the proposition is true or convince the addressee to perform the action. When the goal of the speaker is to get the addressee, who has contrary beliefs, to believe that the proposition is true or to convince the addressee to perform the action, *yo* and *ne* have the following contrasting effects. By using *yo*, the speaker indicates that he believes that the addressee does not believe the proposition or the addressee believes he will not perform the action. Thus, with *yo*, the speaker represents himself as someone who has not achieved his goal of getting the addressee to believe that the proposition is true or that the addressee will perform the action. This act makes the speaker appear more insistent in stating the proposition or directing the addressee to do something. In contrast, using *ne* after the statement indicates that the speaker thinks the addressee already believes the proposition or is willing to perform the action. Thus, with *ne*, the speaker represents himself as someone who has already achieved his goal of making the addressee believe that the proposition is true or that the addressee will perform the action. Therefore, with *ne*, the speaker sounds less insistent.

For example, if a speaker wants to convince his addressee, who is satisfied with her presentation, that her presentation of a graph is bad, the speaker may use *yo* to state strongly to the addressee that her presentation is bad, as in (15a).

(15) a. Kono zu no ichi wa guai warui *yo*.
this graph GN position TP convenience bad
'The position of this graph is not good, *I tell you.*'

On the other hand, if the speaker wants to avoid confrontation with the addressee while convincing her that what she believes is wrong, the speaker may use *ne* to state softly to the addressee as in (15b).

(15) b. Kono zu no ichi wa guai warui *ne*.
'The position of this graph is not good, *don't you think?*'

As an example of the use of *ne* after a directive, suppose the addressee is not willing to accept the speaker's expensive gift because the addressee feels bad about receiving an expensive gift from the speaker. If the speaker really wants to get the addressee to accept his gift, the speaker may use *yo* to direct strongly that the addressee should take the gift, as in (16a).

(16) a. Uketotte kudasai *yo*.
receive please
'Please take it*!*'

In contrast, if the speaker wants to avoid confrontation with the addressee, the speaker may use *ne* to direct softly that the addressee take the gift, as in (16b).

(16) b. Uketotte kudasai *ne*.
receive please
'Please take it, *won't you?*'

Thus, the fact that the speaker appears to be stating or directing strongly to the addressee with *yo*, and appears to be suggesting weakly to the addressee with *ne* — the fact that motivated scalar analyses like Yoshimoto (1992) — follows from the *yo*-principle and the *ne*-principle. Since different degrees of strength of illocutionary force follow from the difference between the *yo*-principle and the *ne*-principle, the independent principles can explain why *yo* and *ne* appear to differ in degree in some situations. Thus, this pragmatic approach explains what the scalar approach had to stipulate.

5. Conclusion

The independent principle approach, in which each SFP is characterized independently, correctly captures the uses of each SFP and is more explanatory than the scalar approach. In the independent principle approach, different principles characterize the use of each SFP and thus, this approach correctly captures the fact that SFPs reflect different attitudes rather than different degrees of the same attitude. Even though SFPs reflect different attitudes, the fact that motivated the scalar analyses follows from the difference between the two principles. Since a scalar ranking follows from the two independent principles, it does not have to be stipulated. Thus, the independent principle approach is more explanatory than the scalar approach.

Since the present approach postulates independent principles for each SFP, it predicts that other SFPs do not necessarily differ in the same dimension. As argued elsewhere (Kose: 1997), the difference among *yo*, *zo*, and *wa* is how directly the speaker can indicate that he believes the addressee should believe the proposition expressed by the utterance. The difference among *yo*, *zo*, and *wa* is not the same as the difference between *yo* and *ne*, which is whether the speaker represents himself as someone who has already achieved his goal or not. Thus, the present approach predicts that there will not necessarily be a single scale on which all SFPs can be placed, but there may be many separate scalar relations between particles.

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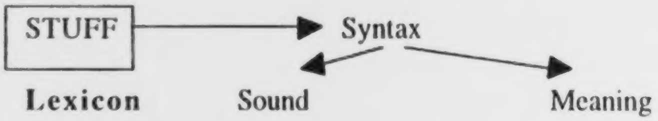
No Escape from Syntax: Don't Try Morphological Analysis in the Privacy of Your Own Lexicon

Alec Marantz

Most contemporary theories of grammar assume a general organization in which elementary constituents are drawn from a place called the "Lexicon" for composition in the syntax, as in (1).

(1)



(Pure) **Lexicon**: place from which items are drawn for the syntax; the source of items used by the computational system of syntax

While it is uncontroversial that our knowledge of language includes a list of atomic elements for syntactic composition, the "Lexicalist" position is of course associated with a stronger claim about the source of building blocks for syntax, as given in (2).

(2) **Lexicalism**: words are created in the Lexicon, by processes distinct from the syntactic processes of putting morphemes/words together. Some phonology and some structure/meaning connections are derived in the lexicon, while other aspects of phonology and other aspects of structure/meaning relations are derived in (and after) the syntax.

So Lexicalism claims that the syntax manipulates internally complex words, not unanalyzable atomic units. The leading idea of Lexicalism might be summarized as follows: Everyone agrees that there has to be a list of sound/meaning connections for the atomic building blocks of language (=the "morphemes"). There also has to be a list of idiosyncratic properties associated with the building blocks. Perhaps the storage house of sound/meaning connections for building blocks and the storage house of idiosyncratic information associated with building blocks is the same house. Perhaps the distinction between this unified storage house and the

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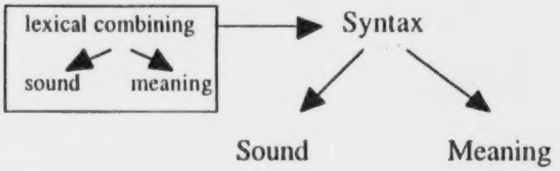
computational system of syntax could be used to correlate and localize various other crucial distinctions: non-syntax vs. syntax, "lexical" phonological rules vs. phrasal and everywhere phonological rules, unpredictable composition vs. predictable composition.... Syntax is for the ruly, the lexicon for the unruly (see, e.g., Di Sciullo and Williams 1987). The Lexicalist view of the computational Lexicon may be pictured as in (3), where both the Lexicon and the Syntax connect sound and meaning by relating the sound and meaning of complex constituents systematically to the sounds and meanings of their constituitive parts.

(3)



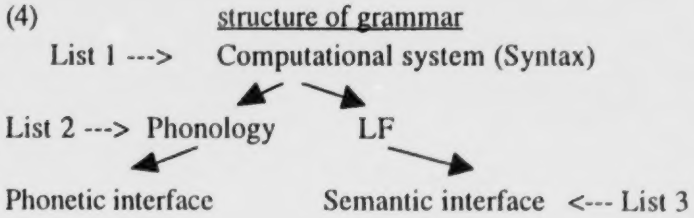
The underlying suspicion behind the leading idea of Lexicalism is this: we know things about words that we don't know about phrases and sentences; what we know about words is like what we would want to say we know about (atomic) morphemes. This paper brings the reader the following news: Lexicalism is dead, deceased, demised, no more, passed on.... The underlying suspicion was wrong and the leading idea didn't work out. This failure is not generally known because no one listens to morphologists. Everyone who has worked on the issues of domains—what are the domains for "lexical phonological rules," what are the domains of "special meanings," what are the domains of apparently special structure/meaning correspondences—knows that these domains don't coincide in the "word," and in fact don't correlate (exactly) with each other. But the people that work on word-sized domains are morphologists, and when morphologists talk, linguists nap.

The structure of this paper is as follows: we open with a Preface, which might be called, "Distributed Morphology," or "the alternative that allows us to dump lexicalism once and for all." Section 2 explains, "Why special sound, special meaning, and special structure/meaning correspondences don't coincide in the word," i.e., why the major claim of Lexicalist approaches to grammar is wrong. Finally, Section 3 goes back to the alleged source of the "lexicalist hypothesis," and explains why "Remarks on Nominalization" (Chomsky 1970), rather than launching Lexicalism, provides a knock-down argument against the Lexicon of lexicalism. (I find some of my points in this paper prefigured, in a different but related context, in Schmerling 1983.)

1. Preface: Distributed Morphology

To many, Lexicalism seems inevitable since most well-articulated theories of grammar assume the computational lexicon as in (2). However, the framework of Distributed Morphology (see, e.g., Halle & Marantz 1993) provides an alternative that allows us to consider what a grammar without lexicalist assumptions might look like. Any theory must include one or more lists of atomic elements that the computational system of grammar might combine into larger units. Distributed Morphology explodes the Lexicon and includes a number of distributed, non-computational lists as Lexicon-replacements; the structure of grammar without the (unified) Lexicon might be represented as in (4) below. The first list in (4), List 1 or the "narrow lexicon," most directly replaces the Lexicon as it provides the units that the syntax operates with. This List 1 contains the atomic roots of the language and the atomic bundles of grammatical features. For present purposes, it is not important whether or not roots in this list carry or are identified by their phonological forms—this issue of the "late insertion" of roots may be separated from other issues in the organization of grammar (see Marantz 1993 for discussion of "late insertion"). The sets of grammatical features are determined by Universal Grammar and perhaps by language-particular (but language-wide) principles. Since these sets are freely formed, subject to principles of formation, List 1 is "generative."

(4)


structure of grammar
List 1 ---> Computational system (Syntax)
List 2 ---> Phonology
LF
Phonetic interface
Semantic interface <--- List 3

(Computational System = "merge and move")

The second list in (4), List 2 or the "Vocabulary," provides the phonological forms for the terminal nodes from the syntax (for roots as well as bundles of grammatical features, unless roots come with their phonological forms from the narrow lexicon). The Vocabulary includes the connections between sets of grammatical features and phonological features, and thus determines the connections between terminal nodes from the syntax and their phonological realization. The Vocabulary is non-generative but expandable. The Vocabulary items are underspecified with respect to the features of the terminal nodes from the syntax; they compete for insertion at the terminal nodes, with the most highly specified item that doesn't conflict in features with the terminal node winning the competition. As Anderson (1992) argues, correctly, against lexicalist approaches to inflectional morphology such as Lieber's (1992), the grammatical underspecification of the phonological realizations of morphemes prevents one from constructing inflected forms via combination of morphemes and percolation of features (see the discussion in Halle and Marantz 1993).

The final Lexicon replacement in (4) is List 3 or the "Encyclopedia"—the list of special meanings. The Encyclopedia lists the special meanings of particular roots, relative to the syntactic context of the roots, within local domains (as described below). As with the Vocabulary, the Encyclopedia is non-generative but expandable.

It is an important and open question how much information about roots is present in the narrow Lexicon (e.g., does the narrow lexicon contain sufficient information to identify particular roots or does it contain only information about classes of roots, of the sort discussed in section 3 below), whether the phonological forms of roots are among the Vocabulary items, and whether and how the particular choice of root from the narrow Lexicon or from the Vocabulary feeds semantic interpretation. The issue of whether root morphemes, like all grammatical morphemes, are subject to "late insertion" (post-Syntactic insertion) is orthogonal to the question of whether or not there's a computational lexicon (i.e., there isn't any such thing as a computational lexicon regardless). (For further discussion of the late insertion of roots, see Marantz (in preparation).)

To imagine a theory in which the grammar constructs all words in the syntax by the same general mechanisms ("merge and move"; see Chomsky 1995) that construct phrases, it is useful to make the natural assumption that whether you get a "zero-level category" (word-like unit) or a phrasal category by merging two constituents is a function of the (categories of the) constituents involved, not of the "merger" operation itself. That is, there is no reason not to build words in the syntax via "merger" (simple binary combination) as long as there are no special principles of composition that separate the combining of words into phrases from the combining of morphemes into words.

2. Why special sound, special meaning, and special structure/meaning correspondences don't coincide in the word

Recall that the claim of Lexicalism is the claim of special status for word-sized units, i.e., that the same units that serve as the basic elements of syntactic composition also serve as the domain for something else. In this section, we reject the proposed correlation of word units with a variety of possible "elses": special sound, special meaning, or special structure/meaning correspondences.

2.1. Special sound: Lexicon as locus of prosodic words or of "lexical phonological rules"

To begin, let's assume that units of various size play a role in the phonology (see, e.g., prosodic phonology). Let's assume in addition that one such unit is the "phonological word" (=Word) and that within each theory that anyone discusses, it is fairly well understood what the "lexical" units needed by the syntax are (=Lexical Items). Under these assumptions, Lexicalism claims that Words are Lexical Items, i.e., that some unit of phonological importance corresponds to the basic unit of syntactic composition. However, within lexical phonology and morphology, no one has ever argued that the Words coincide with the Lexical Items (i.e., as a matter of empirical fact, in cases where some issue might arise). The general lesson from studies in prosodic phonology is that syntactic structure isn't identical to prosodic structure at any level, including the Word level (i.e., it is always necessary to *construct* prosodic structure from syntactic structure (or "map" syntactic structure onto prosodic structure)).

Although Lexical Items might not be phonological Words, they still might serve as phonological units if they were the proper domain of a particular set of phonological rules, the "lexical phonological rules" (characterized at least by the possibility of morphological triggers and exceptions). Where the issue of whether "lexical phonology" applies only within Lexical Items is discussed, the evidence suggests that the Lexical Item is often too small a unit for lexical phonology (see Hayes 1990). I suspect that careful analysis might prove that the Lexical Item is sometimes too big a domain for lexical phonology as well, i.e., that syntactic zero-level units sometimes include domains for post-lexical phrasal phonology.

However, for the sake of argument, let's suppose that the Lexical Item actually proved to be the proper domain for lexical phonological rules, if such a class of rules exist. Even if this were the case, all phonology (including the "lexical" phonology) could be done after the syntax, and there wouldn't be any reason to construct Words in the lexicon (as storage house of items to be used in the syntax). For the Lexicalists' computational lexicon to be supported, one would need to show that the Word corresponds to some special domain relevant to the syntax and LF—e.g., relevant to special meanings and/or special sound/meaning correspondences.

2.2. Special meaning: Lexicon as locus of idiosyncratic "word" knowledge

The idea here for Lexicalism is that the lexicon provides sound/meaning correspondences for word-size units while the syntax provides such correspondences for constructions made of words. There is a continuum between the meanings of atomic morphemes and, at least, derivationally derived words that ends abruptly at the word level. So words can have special meanings of the sorts that roots might have, but syntactically derived structures must have meanings predictable from the meanings of their parts and of their internal structures.

To assess this idea, one must ask whether the special meanings of (phrasal) "idioms" are different from the special meanings of derived words (e.g., "transmission"). The Lexicalist predicts special meanings of words must be truly special, and not equivalent to idiomatic meanings of combination of words. However, as Jackendoff (1996) reminds us recently, there is no sharp divide between the special meanings of words and the special meanings of phrases, nor has there been any systematic attempt to argue otherwise. Idiomatic structures ranging from "light verb" constructions like those in (5) to "The shit hit the fan" show the same properties of special meanings for roots in context as do derived words.

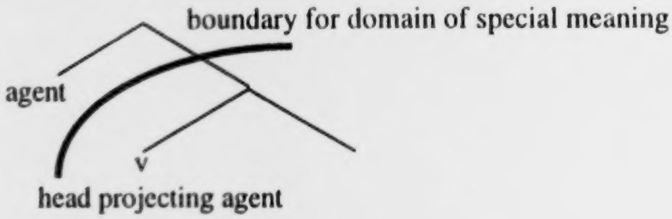
(5) a. Take a leap
b. Take a leak
c. Take a piss
d. Take a break
e. Take five
f. Take cover, issue, heart, over, up, down.......

That there is no sharp divide between word and phrasal special meanings is absolutely and obviously true. But somehow this fact has not much bothered lexicalist theory. The lack of impact of this fundamental truth seems related to the problem of drawing conclusions from unprincipled behavior. If a structure of any size can mean anything, in an "idiom," there doesn't seem much here to hang an argument on. So, Jackendoff, for example, proposes expanding the lexicon to include idiomatic phrases. Special meanings of words don't argue, per se, for a lexicon, but special meanings of phrases don't seem to argue against one.

However, we can make a much stronger argument from special meanings against the special status of words. Because it's not true that a structure of any size can mean anything. Rather, roots may have special meanings (actually, they *must* have "special" meanings since they're defined as the elements whose meanings are not completely determined by their grammatical features) in the (syntactic) context of other elements **within a locality domain**. The locality domains for special meanings are defined syntactically. Since phonological word structure is created post-syntactically (see (4) above), and many functional heads and grammatical morphemes may be packaged inside a single phonological word, these locality domains may sometimes be smaller than a (phonological) word, meaning that some words, like some phrases, **cannot** have special meanings—can't be "idioms."

In point of fact, the locality domains for special meanings do cut across the Word, sometimes carving out structures smaller than the Word, sometimes bigger. I haven't yet figured out anything like the complete theory of locality for special meanings, but I have discovered that the literature has already argued conclusively for one boundary of such domains: The syntactic head that projects agents defines a locality domain for special meanings. Nothing above this head may serve as the context for the special meaning of any root below this head, and vice versa.

(6)



Identifying the head that projects an agent as the boundary for the domains of special meanings makes several predictions that already have been supported by empirical studies:

(7) a. No idioms with fixed agents
(root in agent position, context for special meaning within the VP)
b. No eventive-passive idioms, but possible non-eventive stative idioms

c. No idioms with causative morpheme and lower agentive verb, but possible idioms with causative and lower non-agentive verb

The first prediction in (7a) is a more refined version of a claim made in Marantz (1984) about the non-existence of idioms with fixed external arguments but varying internal arguments. The true generalization is that idioms can't include ("fixed") agentive pieces. So, "The shit hit the fan," must be non-agentive since "the shit" is a fixed part of the idiom. This follows from (6) because, for an idiom to include a fixed agent, the root material in the agent phrase would be getting a special meaning (from the Encyclopedia) in the context of some structure or material below the head that projects the position for the agent—i.e., across a locality barrier for determination of special meaning.

The second prediction (7b) is verified by the literature on differences between so-called "adjectival passives" and "syntactic passives." These differences follow from a structural difference rather than a difference between "lexical" and "syntactic" derivation. The "adjectival"—really, stative—passives are created with a functional head merging below the head that projects agents, while eventive, agentive passives are formed with a functional head merging above (or as) the head which projects agents.

The observation that verbs passive in form can be idioms (or part of idioms) only if they are stative, not if they are eventive, was made for English and French by Ruwet (1991). Some French examples of stative passive idioms are given in (8) (from Ruwet). No such idioms exist with eventive readings.

(8) a. Chaque chose à sa place, et les vaches seront bien gardées.
'Each thing in its place and everything will be OK.'
b. Cet argument est tiré par les cheveux.
'This argument is far-fetched (lit. pulled by the hairs).'

The same difference between passives and statives is noted by Dubinsky and Simango (1996) for Chichewa, as exemplified in (9). Again, statives may be idiomatic, but eventive passives may not be. Unlike French and English, Chichewa uses different vocabulary items for passives and statives, i.e., different suffixes.

(9) a. Chimanga chi- ku- gul -idwa ku-msika.
corn AGR-PROG-buy-PASS at-market
'Corn is being bought at the market.'
[no idiomatic reading, and none possible with passive]
b. Chimanga chi- ku- gul -ika ku-msika.
corn AGR-PROG-buy-STAT at-market
'Corn is cheap at the market.'
[idiomatic reading of 'buy' in the context of STAT]
c. Chaka chatha chimanga chi- na- lim -idwa.
year last corn AGR-PROG-cultivate-PASS
'Last year corn was cultivated.'
d. Chaka chatha chimanga chi- na- lim -ika.
year last corn AGR-PROG-cultivate-STAT
'Last year corn was bountiful.'

The Chichewa situation in which a passive verb—which, as a phonological entity, looks just like a stative verb—cannot have a special meaning illustrates how the domain of special meanings may be smaller than a word. Again, **some words may not have special meanings** (as a matter of grammatical principle).

The third prediction (7c) made by identifying the agent-projecting head as a barrier for special meanings is confirmed by Ruwet (1991), who notes for English and French that a causative construction may not be idiomatic unless the lower verb is non-agentive. So the idiomatic expressions in (10a-c) involve non-agentive lower predicates, and something like "make X swim" cannot induce a special reading for the root "swim" that is not present without "make." Some examples of idiomatic causative constructions from French (Ruwet 1991) in (10e,f) show again that the lower predicate must be interpreted as non-agentive.

(10) a. Make oneself scarce
b. Make X over
c. Make ends meet
d. * Make X swim/fly a kite/etc. (only pure causative meaning on top of independent reading of lower VP)
* = no idiomatic reading
e. Marie a laissé tomber Luc.
'Marie dropped Luc like a hot potato.'
f. On lui fera passer le goût du pain.

'They'll kill him (lit. make the taste of bread pass him).'

g. * Marie a laissé/fait V (NP) (à) NP*, with special meaning of "V" not available outside the causative construction, where NP* is an agent

In languages like Japanese, where causative light verbs show up as affixes on the lower verb root, the restriction on domains of special meaning implies that derived causative verbs with agentive root verbs may not have special meaning/be idiomatic. Work by Kuroda (1993), Miyagawa (1995), and Harley (1995) confirms this prediction, as illustrated by the causative idiom in (11a) and the impossible causative idiom in (11b).

(11) a. tob-ase "fly-make" = demote someone to a remote post—direct causative (non-agentive lower VP) with idiomatic reading

b. suw-ase "smoke-make" = make someone smoke—indirect causative (agentive lower VP) and no possible idiomatic reading that isn't present when the root is used independently of *-sase*)

As with the Chichewa passive verbs, the Japanese causative verbs illustrate how words can be blocked from having special meanings, contrary to the major intuition behind Lexicalism.

2.3. Special structure/meaning correspondences: Lexicon as locus of computation with the same function as syntactic computation, only different

The idea behind Lexicalism is that while the interpretation of morphemes in syntactic structure is fixed by general rules, lexical combination of morphemes within words can have special compositional meaning—or no meaning at all, if some structural combination of morphemes is interpreted as if it were a monomorphemic root. Again, the important intuition behind this idea is that derived words fall into a class with roots, as opposed to phrasal compositions from words, when it comes to determining the relation between structure and meaning.

In the paper, "'Cat' as a phrasal idiom" (Marantz in preparation), I argue that are no special structure/meaning correspondences **anywhere**, neither within words nor within phrases (thus I support Construction Grammar (see, e.g., Goldberg 1995) in the claim that structures carry meaning, but I deny the major assumption of Construction Grammar that such meanings may be structure-specific, rather than general for a language and generally universal—see also Marantz 1992). What you see is what you get; i.e., if the morphophonology justifies decomposition into a complex structure of terminal nodes, the syntax must create this structure and the structure must be interpreted in the regular way for such constructions (with of course the possibility that roots in the construction might have special meanings in the context of (elements of) the construction).

Thus, for example, "transmission" can't mean what "blick" could mean and "kick the bucket" can't mean "die" (cf. Ruwet 1991 and Nunberg et al. 1994). Nouns like "transmission," "ignition," and "administration" carry the semantic implication of their internal structure, which includes an aspectual pre-verb, a verbal stem, and a nominalizing suffix. If these words refer to things, then these things should be for accomplishing something—and this is in fact the case. As has been pointed out by many linguists, "die" does not have the same aspectual properties as "kick the bucket," which itself carries the semantic implications of a transitive verb phrase with a definite direct object (and thus "kick the bucket" is aspectually similar to "pass away," whereas "die" is more like "jump" or, perhaps, "fall"). So one can say, "he was dying for three weeks before the end," but not, "*he was kicking the bucket for three weeks...."

Whether or not it is correct that all structural combination of morphemes are interpreted regularly, without exception, what's crucial here is that no one has shown or even tried to argue that words have special structure/meaning correspondences in some sense that phrasal idioms don't. That is, I would like to insist that neither phrasal idioms nor derived words have special structure/meaning correspondences. However, it is sufficient that this issue of special structure/meaning correspondences doesn't pick out the Word. The same issue arises for phrasal idioms.

What about the intuition behind lexicalism, that words are special? I think this intuition results from the mistaking the role of roots in the language for the role of Words. Things with special meaning are roots. Generally (or, often), there's one root/Word. The functional categories that attach to roots in Words often include boundaries that separate domains of special meaning. So Words often are islands of special meaning, and Words are usually also identified by their root content, where the roots are the items subject to special contextual meanings.

3. "Remarks on Nominalization" kills lexicalism to death

Chomsky's "Remarks on Nominalization" (1970) is often identified as the birthplace of Lexicalism. But what was "Remarks" really about?—or to put the question another way, what's the connection between remarks on nominalization and X-bar theory, which was also introduced in that paper?

Deriving nominalizations from sentences—e.g., (12c) from (12a)—was an attempt to preserve the distributional definition of grammatical categories. Nominalized verbs threatened the distributional characterization of categories since they seem to share some distributional properties with verbs—the ability to take complements and subjects, for example—while sharing other (e.g., morphological) distributional properties with nouns. If nominalized verbs were in fact verbs in the categorial component of language, then their distribution would be unexceptional. Maintaining a strict correspondence between distribution and meaning implied that "N" and "V" need not have any essential internal properties. N's were elements that shared distribution, and as a result shared meaning. NPs containing nominalizations have the meaning of sentences, as predicted by the transformational analysis, or so the argument went.

(12) a. **that John destroyed the city**
b. *that the city destroyed
c. **John's destruction of the city**
d. the city's destruction
e. John's destroying the city

The arguments against deriving nominalizations from sentences were fairly well-known and straightforward by the time the Chomsky wrote "Remarks." He actually barely points to them.

Crucial for Chomsky are the consequences of giving up the distributional definition of grammatical categories. If both Ns and Vs can have complements, and have the head/complement relation interpreted semantically in the same way, then N and V must be distinguished by some internal property, i.e., some feature.

X-bar theory says that, essentially, all the "lexical" grammatical categories have the *same* distribution, taking a complement to form an X', which takes a specifier to yield X-max: the categories are distinguished (only) by their internal features. Differences and cross-categorical similarities between categories are keyed to these features. Before "Remarks," while phones (in structuralist phonological theories) might be grouped into the same category (phoneme) when they were in complementary distribution, words were grouped into the same grammatical category (N, V, Adj) when they *shared* distribution. After the introduction of X-bar theory, lexical categories, like phonemes in contemporary phonological theory, are identified and distinguished by their internal features (e.g., what emerged eventually as the category features +/-N, +/-V).

The wrong notion of what "Remarks" is about is exemplified by this quote from Spencer (1991, p. 69): "Chomsky argued that transformations should capture regular correspondences between linguistic form, and that idiosyncratic information belonged in the lexicon.... derived nominalizations are morphologically, syntactically and semantically idiosyncratic...." Spencer presents an interestingly contrived reading of "Remarks," since the paper is mostly about the *systematic* syntactic and semantic properties of nominalizations, not their idiosyncratic properties, and about why these systematic properties would not follow from deriving nominalizations from sentences transformationally. It's very difficult to argue anything from idiosyncrasies—one argues from systematic differences.

What Chomsky really discussed in "Remarks" is summarized by this quote, Chomsky (1970, p. 17): "We might extend the base rules to accommodate the derived nominal directly (I will refer to this as the 'lexicalist position'), thus simplifying the transformational component; or alternatively, we might simplify the base structures, excluding these forms [the nominalizations], and derive them by some extension of the transformational apparatus (the 'transformational position')." Note that the crucial issue here is about extending the base rules (i.e., allowing N's to take complements) rather than adding operations to a place called "the lexicon." Chomsky proposes no special "lexical rules" or special lexical structure/meaning correspondences in his "Remarks." The "idiosyncrasy" of nominalizations is relevant strictly to the argument against deriving nominalizations from sentences; what's idiosyncratic is the relationship between the nominalizations and any "sentence" that they might be derived from. Within then standard generative theories with deep structure interpretation, the lack of semantic equivalence between nominalizations and their "corresponding" sentences was crucial.

We may up-date Chomsky's "Remarks" theory into contemporary Bare Phrase Structure (Chomsky 1995) terms: Nominalizations like "destruction" and "growth" in (12c, 13d) (as opposed to *-ing* gerunds) are never "verbs" at any stage in the derivation, and thus DPs like those in (12c, 13d) are not transformationally related to sentences like (12a, 13a,b). Roots like √DESTROY and √GROW (to borrow notation from Pesetsky 1995) are category neutral, neutral between N and V. When the roots are placed in a nominal environment, the result is a "nominalization"; when the roots are placed in a verbal environment, they become verbs.

(13) a. **that John grows tomatoes**
b. that tomatoes grow
c. * **John's growth of tomatoes**
d. **the tomatoes' growth**
e. John's growing tomatoes
f. tomatoes' growing (there would surprise me)

For completeness sake, and for an extension of Chomsky's argument below, I include a third class of roots, that of √BREAK, which show nominalizations that take no arguments, not even the argument corresponding to the intransitive subject of the verbal use of the root.

(14) a. that John breaks the glass
b. that the glass breaks
c. * John's break of the glass
d. * the glass's break
e. * the break of the glass
f. the break in the glass

For Chomsky, what explains the *systematic* behavior of nominalizations, as opposed to the behavior of verbs in sentences, is that while certain operations cut across N-headed and V-headed phrases (e.g., NP-movement in passivization and in "the city's destruction *t*"), certain syntactic structures require the verbal environment. In particular, the agent of transitive "grow" in (13a) is not an argument of the root √GROW but rather a type of causative agent projected only in a verbal environment (as is the causative subject of psych verbs like "amuse," among others).

We might review quickly why the systematic asymmetry between nominalizations and sentences presents such an important empirical problem for syntactic theory, one that has nothing to do with any idiosyncratic properties of the roots and words involved. Verbs of the "grow" class are either transitive or intransitive (apparently unaccusative, since the semantic role of the transitive object shows up on the intransitive subject) but their nominalizations are only intransitive. Verbs of the "destroy" class present the mirror-image behavior: they are generally only transitive (see (12b)) but their nominalizations may be transitive or intransitive. Moreover, this paradoxical (from the derive-the-nominalizations-from-sentences point of view) behavior forms part of broad, general patterns and does not exemplify special properties of special words. So verbs with thematic properties similar to "destroy" resist the transitive/inchoative alternation and the impossibility of "John's growth of tomatoes" reflects general constraints on the semantic role of "X" in "X's N of Y" (see, e.g., Pesetsky 1995 for discussion).

The exact (semantic) categories for roots that predicts their varying behavior in nominal and verbal environments is not important here (although identifying these categories is of course essential to syntactic theory). The important point is that there are such categories, there aren't too many of them, and roots can all be assigned to one or another category (or perhaps to multiple categories). There's a further issue (we won't discuss) of whether the categories reflect features of the roots themselves or rather features of functional nodes that serve as the context for the insertion of the roots. The classes in (15) owe much to Levin & Rappoport Hovav (1995).

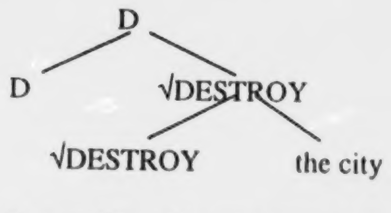
(15)

root	class
√DESTROY	change of state, not internally caused (so, implies external cause or agent)
√GROW	change of state, internally caused
√BREAK	result (of change of state)

Among the functional heads in whose environments roots become verbs (these may be "aspectual" in some sense), one, call it "v-1," projects an agent while another, call it "v-2," does not. These little "v's" could be different flavors of a single head, or perhaps there is some unified account that could have a single head optionally project an agent and thus cover both v-1 and v-2. The details don't matter to us here. Crucially, there's an apparent incompatibility between v-2 and verb roots that imply external cause or agent, like √DESTROY—see (12b). It is possible that a "middle" reading is forced when v-2 is combined with this class of roots ("These carefully constructed sets will destroy easily during the crucial earthquake scenes of the movie") or that such a combination never finds a semantic interpretation.

The tree in (16) displays the nominal use of the √DESTROY root—we assume that merging a root with "D" puts it into a nominal context—in a tree using a modified Bare Phrase Structure notation.

(16) the destruction of the city, the city's destruction

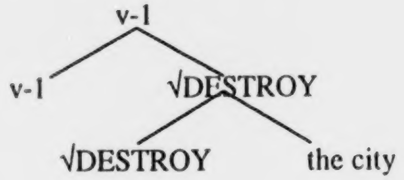


The trick to making this particular instantiation of Chomsky's analysis work is getting the agentive interpretation for the possessor of the DP in (16) without allowing the v-1 head to appear in this construction. If v-1 were involved in the agentive interpretation of "John's destruction of the city," then there would be no systematic way of ruling out "John's growth of tomatoes," since v-1 should be allowed to appear inside this nominalization as well. However, the general behavior of the possessors of NPs allows us to expect the possessor of an externally caused change of state to be (allowed to be) interpreted as the causer. Essentially, "possessors" of NPs may be interpreted in almost any kind of semantic relation with respect to the possessed NP that can easily be reconstructed from the meaning of the possessor and possessed by themselves (consider, e.g., "yesterday's destruction of the city"). It's crucial that the possessive "causer" of "John's destruction of the city" **not** be an agent of the sort projected by v-1, but rather just the sort of agent implied by an event with an external rather than an internal cause.

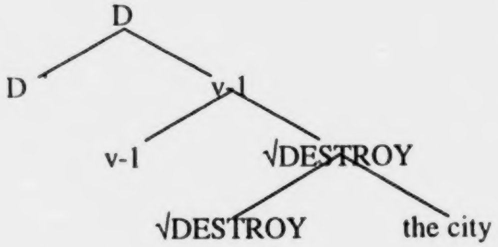
It is not particularly insightful in this context to point out that in sentences like, "The US destroyed the city," or "Neglect destroyed the city," the interpretation allows for agents or causes between the identified higher cause (the "US" and "neglect") and the actual physical destruction (really caused by armies, perhaps, in the first case, maybe vandals in the second). As in, "the city's destruction," the existence of the direct cause of the destruction in such examples must be implied by the root. The plausibility of the analysis here rests on what we have already tried to show: that "John" in "John's destruction of the city," and "John destroyed the city" might receive similar interpretations through different syntactic means, where the different sources of the interpretation can be independently supported.

The agent-projecting v-1, which serves to "verbalize" roots in its environment, occurs of course in the sentence in (17), but also in the *-ing* nominalization in (18). These *-ing* nominalizations are true "nominalizations" within the present framework; unlike "destruction" and "growth," for example, these *-ing* forms contain both a verbalizing (v-1) and a nominalizing environment (D) and so are really nouns made from verbs.

(17) John destroyed the city

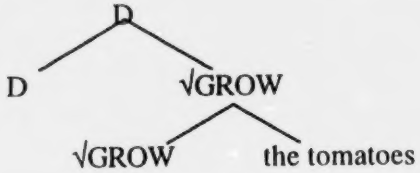


(18) John's destroying the city
(likely more heads between D and v-1, e.g., for *-ing*)



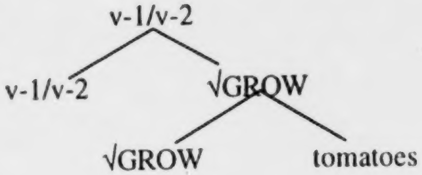
The crucial aspect of Chomsky's analysis is the observation that the root √GROW, unlike the root √DESTROY, is non-agentive. As a consequence, when √GROW is placed in the nominal environment as in (19), there is no agentive argument for the possessive phrase, and we get only "the growth of the tomatoes" or "the tomatoes' growth." However, in a verbal environment such as (20), a syntactically projected agent may appear, yielding "John grows tomatoes."

(19) growth of the tomatoes



Since the root in (19) refers to an internally caused change of state, the complement to the root will be interpreted as both the theme and the internal cause. The possessor of "growth of tomatoes" may be interpreted as vaguely responsible for the growth of tomatoes, but there is no source for a "v-1 agent" interpretation. As an internally caused change of state, √GROW is incompatible with an external agent of the sort implied by √DESTROY.

(20) John grows tomatoes, tomatoes are growing



Chomsky solves the apparent paradox—of the obligatorily transitive "destroy" giving rise to alternatively transitive or intransitive "destruction" and the alternating "grow" yielding obligatorily intransitive "growth"—by having the agent of "grow" restricted to projection in the verbal environment while allowing that the agent of "destroy" is somehow implied by the root. Still, the root of √GROW, naming an internally caused change of state, implies a theme, which shows up as the object of both verbal "grow" and nominal "growth." It appears as if the root √BREAK in (14) names an end state, not an event of change of state. The verbal environment will yield, syntactically, a change of state and consequently a theme, plus optionally an external agent (if v-1 is chosen)—see (14a-b). The nominal form names the end-state, a "break," and takes no complements (see (14c-f)).

Chomsky's argument against the lexicon is quite straightforward. If we derived words in the lexicon, we would derive transitive "grow" there and nothing would prevent us from also deriving the nominalization "growth" with transitive meaning. The only thing that could rule out transitive causative "growth," then, would be some stipulation, such as, "don't make nominalizations from verbs that are causatives of change of state verbs with internal causers." However, the impossibility of causative "growth" follows directly if derivational morphology is syntactic, rather than lexical, and if the only structural source of agents is a head (v-1) that verbalizes a root in its context.

I believe Chomsky's argument from nominalizations to be a knock-out blow against the generative lexicon. However, a natural response to this argument might be to attempt to limit its sweep. Well, one might argue, *agents* of some sorts are in fact projected syntactically, and are not actually arguments of some of the verbs with which they appear in the syntax. So causative "grow" is not, in fact, lexical. But nominalizations (and adjectival passives, etc.) are still lexical. Some derivation is lexical, some (like the derivation of causative "grow") is syntactic.

This counter-argument is, of course, without force unless it is accompanied by some independent characterization of "lexical," i.e., some notion of what would correlate with the derivational processes that are lexical as opposed to syntactic. Everyone will agree that there are different domains in grammar; we saw above, for example, that syntactic domains determine the possible environmental triggers for "special meanings" in idioms. As diagrammed above (16, 18), there's a real (syntactic) sense in which "destruction" is smaller than "destroying," with the latter including a verbalizing head lacking in the former. This difference should correlate with other differences, ones dependent on syntactic domains. But, in the case of nominalizations, what would correlate with the "lexical" derivation of "growth" and "destruction," if the lexical/syntactic dichotomy were real?

Chomsky's argument from "growth" can be made stronger, in that it may be extended as an argument against any notion that the lexicon correlates special sound and special meaning. Note that the root √RISE belongs to the √GROW class and/or the √BREAK class, as illustrated in (21-22). When elevators "rise," this is likely interpreted as in internally caused change of state. When I "raise" my glass, I think the interpretation favors no implication of an internal cause. However, in the context of construction equipment, I think one can say, "I raised the crane two floors," with the internal-cause reading preserved, paralleling, then, "I grew tomatoes."

(21) a. the elevator is **rising** [v-2]
b. John is **raising** his glass [v-1]

Note that "rise" has a special pronunciation in its transitive use, "raise"—in the context of v-1. As we would predict for a verb of either the √GROW of √BREAK class, the transitive nominalization "raise" is not allowed, as in (22a) (I write this as "raise" rather than "rise," but under current assumptions, since v-1 doesn't appear inside these "nominalizations," the context for the special pronunciation of √RISE as "raise" is absent). On its √GROW-like internally caused reading, the intransitive nominal "rise" may take an argument, as in (22b). On its no-internal cause reading, the nominal "rise," like "break," takes no argument (22c). Of course the nominalization of the verbal use of √RISE/RAISE may be transitive, as in (22c).

(22) a. * John's raise of the glass [no v]
b. The elevator's rise to the top floor [no v]
c. ??the rise of the glass [no v]
d. John's raising of the glass [v-1]

Roots of course can take on special non-compositional meanings in particular environments. √RISE does take on special meaning in the context of v-1, a meaning not present in the context of v-2. In fact, the special meaning in (23a) is much like that of causative "grow"—"to raise animals" parallels "to grow plants."

(23) a. John raised a pig for bacon. [special meaning for RISE in context of v-1]
b. * The pig raised/rose for bacon. [special meaning absent without v-1]

Crucially, even though there is a special sound and a special meaning for √RISE in the environment of v-1, the special "raise" in (23) may not appear in nominalizations any more than the non-special "raise of glass" can in (22a)—see (24).

(24) * John's raise of the pig for bacon.

This discussion reveals a more general argument against the lexicon than that emerging from the consideration of "growth" alone: If the lexicon stores special sound and special meanings, and provides the locus for the correlation between special sound and special meaning, then causative "raise" with special sound (for the causative of "rise") and special meaning ('raise animals') must be formed in the lexicon. But now there is no explanation for why the nominalization of causative "raise" with the special meaning (or non-special meaning) is impossible.

By dissolving the lexicon, we return directly to the issues that motivated lexical phonology and morphology in the first place: what are the domains for contextual allomorphy and contextual allosemy (special meanings in particular contexts)? The failure of lexicalism is simply the falsification of an attractive and reasonable hypothesis: that the "word" (in some sense) is a privileged domain in grammar.

It is important to note that I am not claiming that there are a priori reasons to reject the Lexicon or that the picture of grammar in (4) is conceptually superior to that in some version of Government-Binding theory married to lexical phonology and morphology. I will scream in agony if I read or hear anyone summarizing this paper as, "Marantz argues grammatical theory would be simpler without a lexicon," or, "the paper shows that Distributed Morphology, with its Vocabulary and Encyclopedia, is conceptually superior to Lexicalist theories." The failure of lexicalism was a noble empirical failure—it made false predictions. The question is not which theory is simpler or more pleasing; the question is which theory is right.

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What Does the Copula Do?[*]

Kunio Nishiyama

1. Introduction

It is widely assumed in the literature on the copula that there are at least two kinds of copula (cf. Higgins 1973):

(1) a. John is a boy. (predicative)
b. Dr. Jekyll is Mr. Hyde. (equative)

It is controversial whether these different usages should be treated differently or can be given a unified account, and this is not my concern here. The purpose of this paper is to analyze the syntactic structure of predicative copular sentences like (1a) from a crosslinguistic perspective.

Since Bach (1967), it has often been claimed that the copula is a tense-supporter.[1] For example, Rapoport (1987: 152ff) notes the following contrast:

(2) a. I consider [Xeli a nut].
b. Xeli *(is) a nut.

In a small clause structure like (2a), no copula is necessary, even though there seems to be a predication relation between *Xeli* and *a nut*. In the matrix sentence, however, the copula is necessary (2b). Since (2a) shows that the copula is not necessary for predication, Rapoport (1987: 157) claims that "*[b]e* is inserted to support the feature of INFL, in the cases above [2b] the features of tense ([-past]) and agreement." According to this hypothesis, (3) is analyzed as (4):

(3) Sal was strong.

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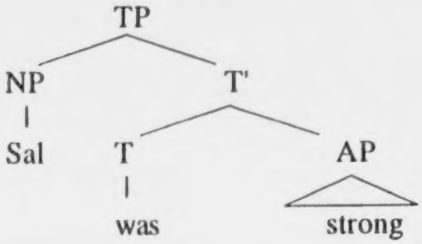
[*] I thank John Bowers, Keiko Miyagawa, and John Whitman for discussion.

[1] Déchaine (1993: 303) cites references on this view such as Williams (1984: 136f), Rothstein (1983: 73f), Gestel (1986), Rapoport (1987: 155ff), and Moro (1990).

(4) *Hypothesis A: Copula as a tense supporter*

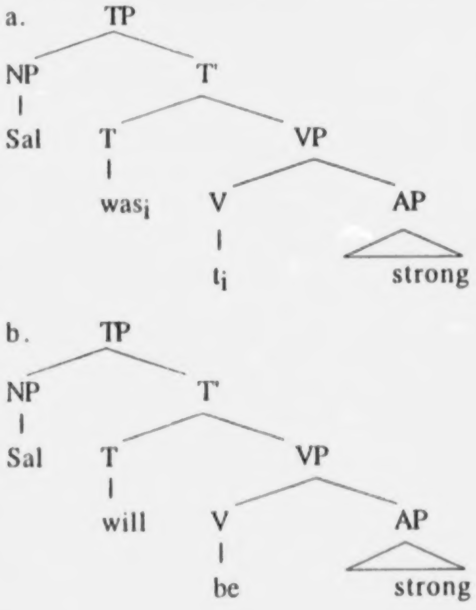


This view on the copula has recently been criticized by Déchaine (1993). Déchaine cites (5),

(5) a. Sal was strong. b. Sal will *(be) strong.

and points out that "if English modals are base-generated in Tense [...], the obligatoriness of *be* in [5b] is unexpected in an insertion analysis" (p.304). Although it is possible to assume a modal feature in (5b) and claim that *be* supports the modal feature (cf. Rapoport 1987: 158), Déchaine proposes that the copula heads its own VP projection. Thus, (5a-b) are analyzed as follows:[2]

(6) *Hypothesis B: Copula as a dummy verb*



(adapted from Déchaine's 23' and 24")

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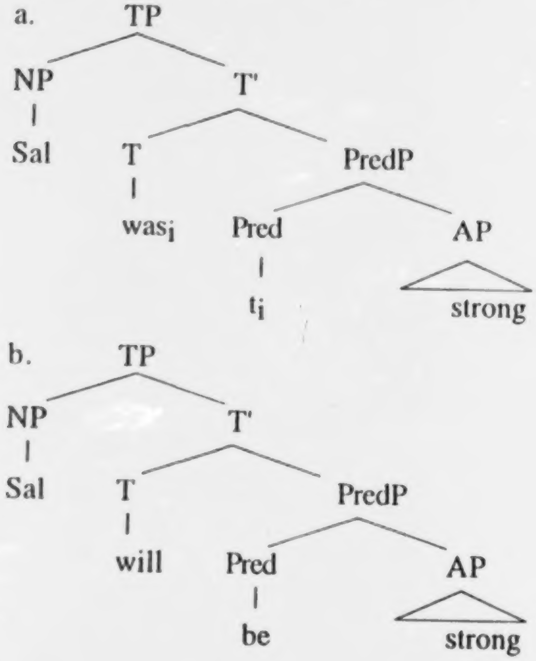
[2] We return to Déchaine's proposal in section 3.

What is common to (4) and (6), despite the absence / presence of VP, is that they both assume that the copula has no semantic import.

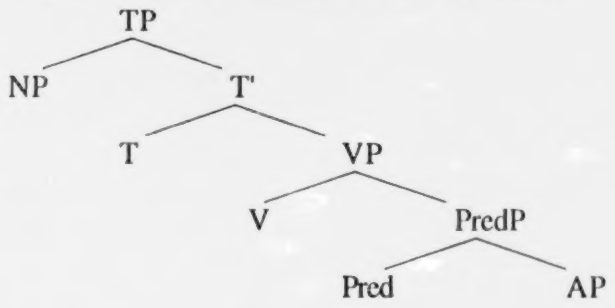
Still another analysis of the copula is possible. According to Bowers (1993), whenever there is predication, there is PredP. If the copula projects PredP, (5) is analyzed as follows:

(7) *Hypothesis C: Copula as a predicate*



Since (6) and (7) look similar, one might wonder whether they are notational variants, and if not, which is correct. The claim of this paper is that **(6) and (7) are not notational variants** and that both are basically correct. In particular, I claim that Japanese copular sentences have the following structure (abstracting away from linear order):

(8) *Hypothesis D: The layered copula hypothesis*



This structure is motivated by the existence of two morphologically distinct copulas in Japanese. In section 2, I claim that one class of adjectives in Japanese shows that Japanese has two kinds of copulas, one semantically vacuous and projecting VP, and the other semantically contentful and projecting PredP. Section 3 analyzes the other kind of Japanese adjectives and discusses the peculiarity of the present tense in the sense clarified there.

2. Two Types of Copulas

This section is concerned with the class of Japanese adjectives which I dub *Nominal Adjectives (NAs)*[3]

(9) *Nominal Adjectives (NAs)*

a. yoru-ga sizuka da
night-Nom quiet copula.pres
'The night is quiet.'

b. hon-ga kiree da
book-Nom pretty copula.pres
'The book is pretty.'

What characterizes NAs is that their root does not inflect and they take the copula, which inflects. According to Bloch, a pioneering American scholar of the Japanese language, "every predicate contains an INFLECTED word as its NUCLEUS" (1946: 207, small capital original). Since he refers to the whole expression consisting of "NA + copula" as a predicate and identifies the copula as the inflected part, his view is consistent with Hypothesis C in (7). That is,

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[3] NAs are called *Keeyoo-doosi* (lit. adjectival verbs) in traditional grammar.

Bloch assumes that the copula is Japanese has some semantic import. The following supports this view:

(10) a. John-ga Bill-o siawase ni sita
-Nom -Acc happy cop made
'John made Bill happy.'

b. John-ga kabe-o makka ni nutta
-Nom wall-Acc crimson cop painted
'John painted the wall crimson.'

Regardless of how the sentences in (10) are analyzed, it is obvious that where English requires no copula, Japanese requires (some allomorph of) the copula (cf. Martin 1975). Recall from (2) that the fact that small clauses contain no copula led some researchers to conclude that the copula is the tense supporter and is semantically vacuous. But (10a-b) show that even when there seems to be no tense feature to support, Japanese requires the copula. This indicates that, as far as Japanese is concerned, Hypothesis C in (7) is empirically correct.

If (7) is correct in Japanese, does this mean that Japanese has no dummy copula and (6) is wrong for Japanese? Recently, Urushibara (1993) has proposed that Japanese indeed has a *dummy* copula. Consider:

(11) a. yoru-ga sizuka da (=9a)
night-Nom quiet copula.pres
'The night is quiet.'

b. yoru-ga sizuka de ar-u
night-Nom quiet copula.gerund dummy.verb-pres
'The night is quiet.'

Note that *da*, the present form of the copula in (11a), can be replaced by *de aru*, the gerundive form of the copula plus a dummy verb in (9b).[4] Apart from some stylistic differences, (11a-b) are basically synonymous. Therefore, let us suppose that ***da* is the contracted form of *de aru*.**[5]

There are contexts where contraction cannot apply:

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[4] Since *ar-u* means 'exist', (11b) literally means 'the night exists being quiet.'

[5] The same position is taken by Urushibara (1993: 15), who does not make any arguments for this assumption. She cites Ueyama (1991) in this regard but fails to give the reference.

(12) a. yoru-ga sizuka de-mo ar-u
night-Nom quiet copula.gerund-even dummy.verb-pres
'The night is even quiet.'

b. *yoru-ga sizuka da-mo (ar-u)
night-Nom quiet copula.pres-even (dummy.verb-pres)
'The night is also quiet.'

In (12), the predicate is focused with the particle *mo*, and the only possible expression is with *de*, as in (12a), not with *da*, as in (12b). If *da* is the basic form of the copula, it is not clear why it cannot be used in (12b). If *da* is the contracted form of *de aru*, the contrast in (12) follows by assuming that there is an adjacency requirement in the contraction of *de aru* into *da.* Thus, when a particle like *mo* intervenes between *de* and *aru*, as in (12b), adjacency is disrupted and the contraction is blocked.

Another context where the contraction is blocked is in appositive clauses:

(13) Taro-ga hunanori *da/*no/*na/de aru koto
-Nom sailor fact
'the fact that Taro is a sailor.'
(adapted from Kubo 1992: 139)

Here, even though there is no intervening element between *de* and *aru*, we cannot use *da* or any other adnominal allomorph of the copula such as *no* or *na*. If *da* is the basic form of the copula, it is again not clear why it cannot be used in (13). In our terms, *da* cannot appear in (13) because the contraction is blocked in appositive clauses for some reason. Whatever the reason, I think (13) suffices to show that it is not *da* but *de aru* that is the basic form.[6]

Now, let us follow Urushibara (1993) and regard the dummy verb /ar/ as the copula. Since I am also assuming, following Bloch, that /de/ is also the copula, I refer to **/ar/ as the *dummy copula* (dum.cop)** and **/de/ as *predicative copula* (pred.cop)**. The following contrast shows that /de/ is essential for predication but /ar/ is a dummy:

(14) a. sizuka de ii
quiet cop good
'Being quiet, it is good.'

---

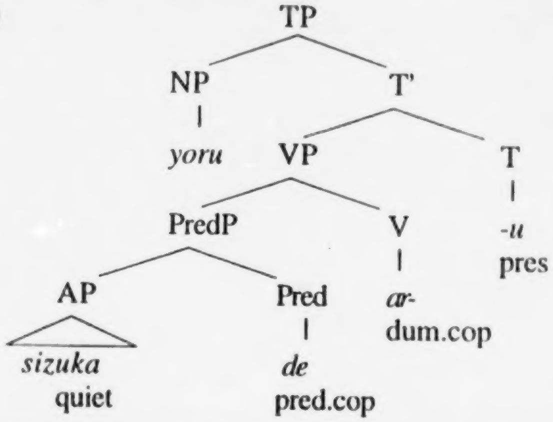
[6] The contraction in question is not a phonological process. See Nishiyama (1997) for the nature of this construction.

b. *sizuka atte ii
quiet cop good
'Being quiet, it is good.'

(14a-b) are gerundive sentences. As (14b) shows, *atte*, the gerundive form of /ar/, cannot enable *sizuka* to function as a predicate, but *de* can (14a). This shows that /de/, but not /ar/, is the pred.cop, which is necessary in predication. /ar/ is the dum.cop that supports an affix.

Suppose that the predicative copula and projects Pred(icate) Phrase in the sense of Bowers (1993). Then we have the following structure for both (11a-b):

(15)



Bowers' (1993) main claim is that small clauses are uniformly of category PredP. However, since Pred is usually null,[7] it is hard to empirically support his proposal. Japanese, which always has the overt realization of the pred.cop in small clause contexts (cf. 10), provides direct empirical evidence of the desired kind. Since Bowers claims that PredP is required whenever there is predication, and Japanese NAs always require the pred.cop, the analysis in (15) strongly supports Bowers' theory of PredP. The next question is, why do we need the dummy copula /ar/ above? Section 3 answers this question.

---

[7] The only possible candidate for an overt Pred in English cited by Bowers (1993: 596) is *as* in "I regard John as crazy / an idiot."

3. Peculiarity of the Present Tense

This section discusses another class of Japanese adjectives, which I dub *Canonical Adjectives (CAs)*:

(16) *Canonical Adjectives (CAs)*

a. yama-ga taka-i
mountain-Nom high-pres
'The mountain is high.'

b. miti-ga hiro-i
road-Nom wide-pres
'The road is wide.'

Contrary to NAs in (9), CAs seem to require no copula. Due to this apparent radical difference, no attempt has been made to give a unified syntactic analysis of NAs and CAs.[8] However, consider the following focus sentences:

(17) a. yama-ga taka-ku-mo ar-u
mountain-Nom high-ku-even dum.cop-pres
'The mountain is even high.'

b. yoru-ga sizuka-de-mo ar-u (=12a)
night-Nom quiet-de-even dum.cop-pres
'The night is even quiet.'

Note that (17a-b) are almost completely parallel, the sole difference being that where (b) uses *de*, (a) uses *ku*. If *de* is the predicative copula, as I have argued in the previous section, it is plausible that *ku* in (b) is also the pred.cop. Therefore, abstracting away from the focus particle *mo*, (17a) should be analyzed as follows:

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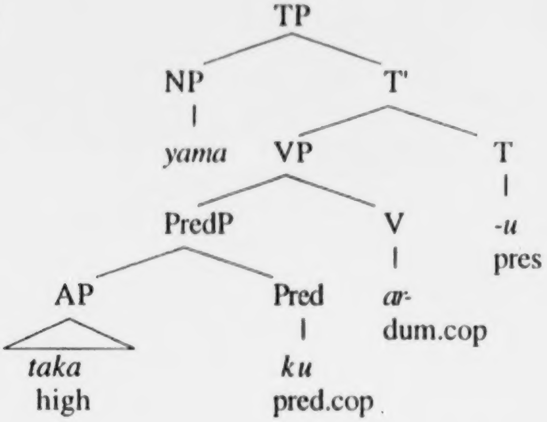
[8] Exceptions are Kubo (1992) and Urushibara (1993). See Nishiyama (1997) for the similarities and differences between their analyses and mine.

(18)



However, (18) would wrongly yield (19a):

(19) a. *yama-ga taka-ku ar-u
mountain-Nom high-ku dum.cop-pres
'The mountain is even high.'

b. yama-ga taka-i (=16a)
mountain-Nom high-pres

The correct form is (19b). Recall from (11b) that (17b) is grammatical without *mo*. This contrasts with (17a), which would be ungrammatical without *mo* (19a). Thus, the problems we must solve to maintain the hypothesis that *de* and *ku* have the same status are the following[9]:

(20) a. Why doesn't [ku] appear in (19b)?
b. Why doesn't the dummy copula appear in (19b)?

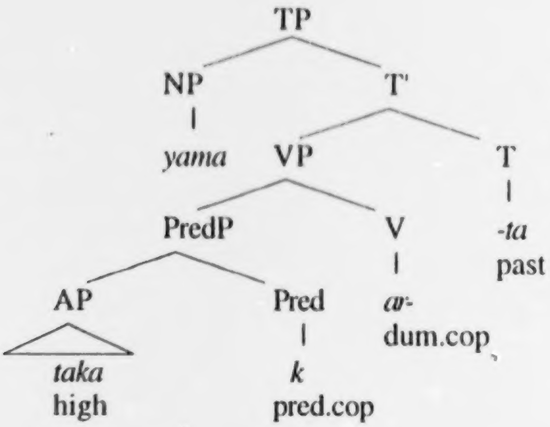
To answer these questions, it is useful to consider the past form of (19b):

(21) a. yama-ga taka-k-at-ta
mountain-Nom high-pred.cop-dum.cop-past
'The mountain was high.'

---

[9] What is wrong with (19a) is discussed by Sells (1996), who rules it out by economy of representation (his AVOID AFFIX).

b.



Unlike (19b), (21a) contains both the pred.cop /k/ and the dum.cop /ar/. (*at-* is due to assimilation.) Thus, suppose that (19b) is underlyingly /taka/-/k/-/i/, and that /k/ is deleted by a phonological process. Suppose further that [u] in *ku* in (17a) is the result of phonological epenthesis. If these construals are correct, the lack of *k(u)* in (19b) raises no problem for postulating the pred.cop /k/ (underlyingly). I refer readers to Nishiyama (1997) for extensive justification of [k]-deletion and [u]-epenthesis. The focus of the discussion in this section is on (20b): why is no dummy copula required in the present tense in (19b)?

Following Urushibara's (1993: 36) insight, I analogize the lack of the dum.cop in (19b) to the crosslinguistic tendency that present tense does not require the (dummy) copula. Consider the following sentences in Modern Hebrew:

(22) a. Dani more ba-universita
teacher in.the-university
'Dani is a teacher at the university'

b. Dani haya more ba-universita
be.past teacher in.the-university
'Dani was a teacher at the university'
(Déchaine 1993: 303)

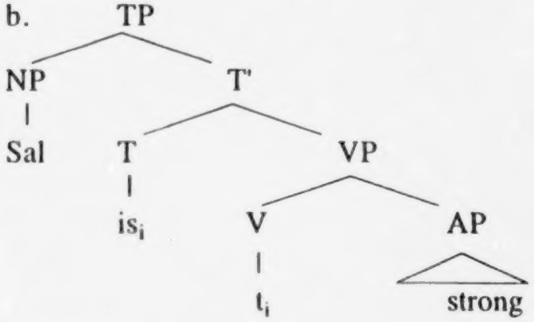
Note that in the present tense (22a), no copula appears, unlike in the past tense (22b). Déchaine (1993: 309ff) proposes (23) and accounts for why some tenses do not require the copula:

(23) *Morphological Tense Hypothesis*
Morphological tense c-selects V, but non-morphological tense has no c-selection.

According to this hypothesis, (24a) is analyzed as (24b):

(24) a. Sal is strong.

b.



(cf. 6A)

Since the tense in (24) is morphological, it selects V, and this is why we have the copula in (24).

However, it is not clear to me what Déchaine means by "morphological." First, it does not seem to mean "phonologically overt," because it is not clear what part of *is, are,* and *am* is the overt realization of the tense morpheme per se. Rather, the standard analysis is that when the tense and agreement features are supported by /be/, they are realized as *is, are,* or *am*. Besides, though the Japanese CA present marker [i] is an overt morpheme, it does no require the dum.cop (cf. 19b). So the phonological entity is not relevant in (23).

"Morphological" in (23) doesn't seem to mean "underspecified tense" either, because Déchaine explicitly rejects Doron's (1983) and Enç's (1991) proposal that the tense feature of the present tense is underspecified. In addition to Déchaine's conceptual argument against this underspecification approach, the following empirical argument to the point can be cited:

(25) a. Jak manje pom nan
eat apple Det
'Jak ate the apple.'

b. Jak renmen pom nan
like apple Det
'Jak likes the apple.'

(Haitian, Déchaine 1993: 295)

As (a) shows, a specific DP with a bare eventive verb gives a past reading in Haitian, while a stative verb remains non-past in interpretation (b). In underspecification theory, the present tense in (b) has no tense feature; thus there is no need to support it, as shown by the bare form of the verb. However, since (a) also seems to contain the underspecified tense, it is not clear why it has the past reading.

Third, "morphological" in (23) does not mean "affixal," either. Recall that in the present forms of CAs like *taka-i* 'high-pres' (19b), /i/ is supported by *taka-* (non-V), without any help of the dummy copula (V). Thus, whether the tense marker is affixal or not is irrelevant to whether it selects V or not.

I reinterpret Déchaine's proposal as follows:

(26) *Verb-Selecting (VS) Feature*
If an affix has the VS feature, it selects (or is supported by) a verb.[10]

Of course, (26) is just a restatement of the facts. What I am trying to show is that this feature cannot be reduced to any existing inventory of features (tense specification, affix, or phonological), and that this single feature accounts for the behavior of the copula in English, Hebrew, and Japanese. In English, tense uniformly has the VS feature. This is why it always has an overt copula in matrix copula sentences (cf. 5). In Hebrew, while the past tense has the VS feature, the present tense doesn't. This is why there is no copula in the present tense, while there is a copula in the past tense (cf. 22).

In Japanese CAs, the following paradigm shows that the behavior of the present form is exceptional rather than regular:

(27) a. taka-i (<= /taka/-/k/-/i/ 'high-pred.cop-pres)
high-pres

b. taka-k-at-ta
high-pred.cop-dum.cop-past

cf. at-ta
exist-past

c. taka-k-ar-oo
high-pred.cop-dum.cop-presumptive

cf. ar-oo
exist-presumptive

---

[10] In terms of feature checking theory, the VS feature is checked off only by a verb.

Note first the parallelism between (b-c) and the corresponding forms of the lexical verb /ar/ 'exist'. Since they are identical, they support my claim that /k/ and /ar/ can be abstracted from (b-c) as the predicative copula and the dummy copula, respectively. However, (a) contains no /ar/. (Recall that /k/ exists underlyingly.) In our terms, while /ta/ and /oo/ have the VS feature and must be supported by a verb (i.e., dum.cop), /i/ in (a) has no VS feature (or its value is specified negative). This is why there is no dum.cop /ar/ in (a).[11]

Consider finally another paradigm of CAs:

(28) a. taka-k-u nai
high-pred.cop-epenthesis neg

b. taka-k-ereba
high-pred.cop-conditional

c. taka-k-u-te
high-pred.cop-epenthesis-gerundive

Contrary to (27b-c), the existence of /ar/ is hard to attest in (28a-b). It is possible to find /ar/ in (28a-b) diachronically. That is, *nai* in (a) is the result of suppletion of *-ar-azu* 'dum.cop-neg', and *-k-ereba* in (b) is originally probably *-ki ar-eba* (dum.cop-cond), with [i + a] > [e].[12] However, synchronically speaking, these construals do not make much sense. Rather, /nai/ and /ereba/ in Modern Japanese have simply acquired a status that enables them to stand without the support of a verb (dum.cop /ar/). In our terms, by incorporating /ar/ etymologically, /nai/ and /ereba/ lost the VS feature, and have come to be able to attach to (or select) a CA root (plus the pred.cop) directly. Of particular interest is /te/ in (28c), in which no evidence can be found for the existence of /ar/ etymologically or phonologically. Thus, /te/ is considered to be another candidate lacking the VS feature.

4. The Typology of Copular Sentences

This paper has argued that there are two kinds of copula: a predicative copula (pred.cop) and a dummy copula (dum.cop). The former is necessary for predication and exists universally whenever there is predication (cf. Bowers 1993). Although pred.cop is usually null in English, Japanese manifests overt counterparts of the pred.cop: /de/ or /k/. That pred.cop is not the dummy tense supporter is confirmed by its appearance in small clauses, where there is no tense to support. The role of tense-supporting is played by dum.cop, whose existence depends on whether the tense has the feature specification to be supported by a verb (i.e., whether the tense has the VS feature or not). Utilizing the two parameters, i.e., whether the pred.cop is null or overt and whether the tense has the VS feature or not, there are four types of copular sentences: [overt pred.cop, +VS], [overt pred.cop, -VS], [null pred.cop, +VS], [null pred.cop, -VS]. As a summary of this paper, I exemplify the four classes of copular sentences below:

---

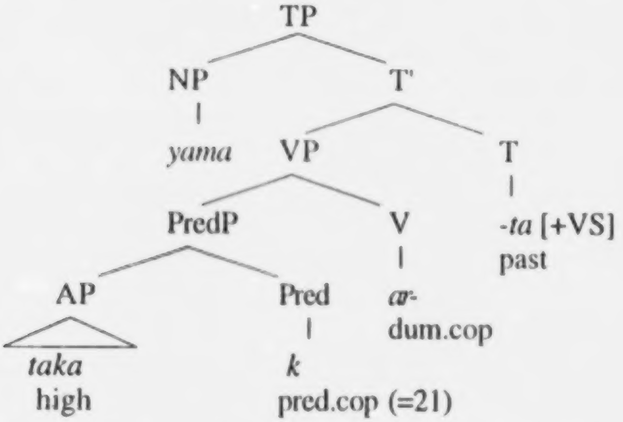
[11] Since another present marker /u/ requires the dum.cop /ar/ (cf. 11b, 17), it has the VS feature, unlike /i/.

[12] Because of the frontness of [i], the reconstruction of [ki-areba] for [kereba] is more plausible than [ku-areba] (John Whitman, p.c.).

(29) Japanese past CAs: [overt pred.cop, +VS]

a. yama-ga taka-k-at-ta
mountain-Nom high-pred.cop-dum.cop-past
'The mountain was high.'

b.

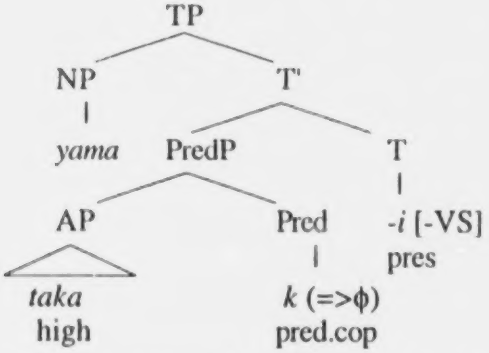


Because of the VS feature, /ta/ must be supported by a verb (dum.cop) /ar/. Pred.cop is overtly realized as /k/.

(30) Japanese present CAs: [overt pred.cop, -VS]

a. yama-ga taka-i (=16a, 19b, 27a)
mountain-Nom high-pres

b.

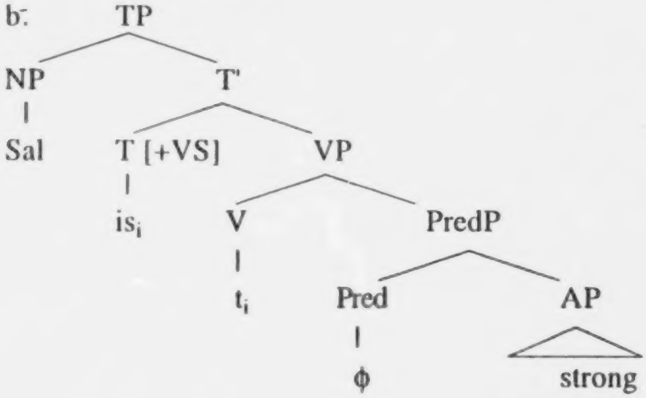


Due to the lack of (or negative specification of) the VS feature, /i/ does not have to be supported by a verb. This is why we don't have /ar/ in (30). Although the pred.cop /k/ is eventually deleted, it exists underlyingly.

(31) English: [null pred.cop, +VS]

a. Sal is strong.

b.

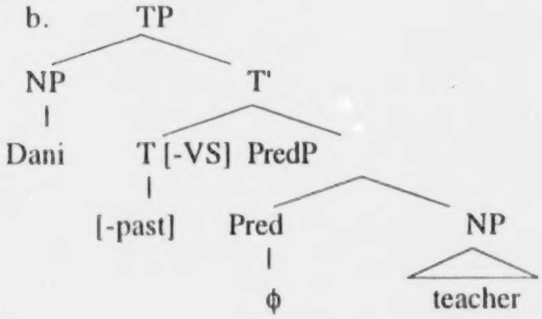


Since English tense is always specified with [+VS], the copula is called for. Since small clauses in English contain no copula, the English copula is dummy, not predicative. The predicative copula is null in English. I follow Bowers (1993) in that even though Pred is almost always null, there is PredP whenever there is predication. One attractive aspect of this hypothesis is that it makes it possible to analyze small clauses as PredP uniformly, as discussed by Bowers.

(32) Hebrew present tense: [null pred.cop, -VS]

a. Dani more (=22a)
teacher
'Dani is a teacher.'

b.



Since Hebrew present tense has no VS feature (or specified negatively), no (dummy) copula is required in (32). The past tense, on the other hand, has the VS feature, and is supported by the copula, as we saw in (22b).

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Disyllabic Requirement in Swahili Morphology

Jae-Ick Park

1. Background

In the world's languages we can find languages with disyllabic or bimoraic minimum size requirements in morphology. Among these languages, we can also find diverse strategies to keep words over the minimum size. Some of the examples are blocked apocope in Estonian (Prince 1980), appendices and blocked truncation in Lardil (Wilkinson 1988), vowel lengthening in Bengali (Cole 1990), prothesis in Choctaw (Lombardi & McCarthy 1991), Iraqi (Broselow 1982), and Mohawk (Broselow 19 82), appendices in Axininca Campa (Spring 1988, McCarthy & Prince 1993), epenthesis, cliticization and consonant gemination in Mayo (Hagberg 1992), and glide deformation in Mexican Spanish (Crowhurst 1992). Prosodic minimality and its related effects can also be found in Eastern Bantu languages, such as Luganda (Hyman & Katamba 1990), Kihehe (Odden & Odden 1985, Odden 1996a), Shona (Myers 1987), Chichewa (Kanerva 1990), Siswati (Kiyomi & Davis 1992, Herman 1996), Kikerewe (Odden 1996b), Runyankore (Poletto 1996), etc. In Swahili, the special behavior of monosyllabic verbs has been treated as a grammatical exception, but can be better explained by the notion of the morphological requirement (Nurse & Hinnebusch 1993, Park 1995).

This study will, first, present various disyllabic minimum requirements which govern Swahili morphology from synchronic and diachronic points of view, and then will analyze parts of them in constraint-ranked optimality theory (McCarthy & Prince 1993, 1995 among others). This study is the first comprehensive study on prosodic minimality in Swahili and its application to optimality theory.

2. Disyllabic Requirement in Swahili Morphology

Swahili exhibits various morphophonological phenomena which are affected by disyllabic minimum requirement in the language. First of all, in declarative statements in Swahili, monosyllabic verb stems require the infinitive marker *ku*, as in (1a), while multisyllabic (i.e., disyllabic or bigger) stems do not, as seen in (1b).

(1) a. *sp- pres- inf-vs*
*Ni- na- [la].
Ni- na- [ku- la]. 'I am eating.'
b. *sp- pres- inf- vr ob*
Ni- na- [soma] barua.
*Ni- na- [ku- soma] barua 'I am reading a letter.'

This suggests that a disyllabic requirement exists for Swahili verb stems. This phenomenon is also found in imperative, negative past, and conditional sentences.[1]

We can find the disyllabic requirement also in reduplication. Example (2) shows that in the reduplication of multisyllabic verb stems, only the verb stems reduplicate, excluding prefixes.

(2) a.	inuka-inuka	inuka	'rise up'
	rudia-rudia	rudia	'go'
b.	ji-pinda-pinda	ji-pinda	'be fold'
	m-binya-binya	m-binya	'pinch him'

However, in the reduplication of monosyllabic verb stems, as example (3) shows, the prefixes *ku* or *m(w)* is followed by a monosyllabic verb.

(3) a.	ku-ja-kuja	*ja-ja	ja	'come'
b.	m-pe-mpe	*m-pe-pe	m-pa	'give him'
c.	mw-ona-mwona	*mw-ona-ona	mw-ona	'see her/him'

The special behavior of monosyllabic verbs, unlike that of longer verbs, requires that the syllable before the verb root, such as an infinitive or an object prefix, also be copied so that the reduplicated part can be disyllabic.[2]

The regular Swahili passive morpheme is *w* as in (4a), but monosyllabic verbs require an epenthetic vowel *i* or *e* in addition to the passive morpheme *w* as in (4b). This epenthesis is motivated not by phonotactics but by the fulfillment of the disyllabic requirement for verb stems.

---

[1] In subjunctive and present negative structures, the *ku* is not required, and this could be due to some pragmatic or functional reason.

[2] The reduplicative parts in *te-temeka* 'tremble (verb)' and *nyeusi ti-ti-ti* 'pitch black (ideophone)' are not disyllabic.

(4)		stem	passive	
	a.	nepa	nepwa	'sag'
		acha	achwa	'give up'
		danganya	danganywa	'deceive'
		pika	pikwa	'cook'
	b.	pa	pewa	'give'
		cha	chewa	'dawn'
		nya	nyewa	'drip'
		la	liwa	'eat'

The disyllabic minimal requirement is also responsible for exceptions in some historical changes. A voiceless prenasalized or a plain voiceless consonant in Swahili diachronic phonology, as seen in (5a).

(5)					
	a.	mpaka	>	p^haka	'cat'
		ntembo	>	t^hembo	'elephant'
		nsimba	>	simba	'lion'
	b.	nta /n.ta/		$*t^ha$	'wax'
		nca /n.ca/		$*c^ha$	'tip'
		nswi /n.swi/		*swi	'fish'

The words in (5b), however, fail to undergo the nasal deletion in voiceless prenasalized consonants. The reason is that deletion of the nasal class prefix would result in a violation of the disyllabic minimal word, since the nasal before a monosyllabic noun stem contributes to syllabicity by way of resyllabification.

Another type of evidence for disyllabic minimality of Swahili words comes from nouns in class 11, which have the prefix *u*. In (6a), the prefix *u* is removed in plural formation. On the other hand, in the plural forms in (6b) the *u* does not drop; rather, the class prefix *N* is added to retain nouns with two syllables.

(6)		sing.(cl.11)	plural (cl.10)		
	a.	ukuta	_k^huta	(<Nkuta)	'wall'
		ufagio	_f^hagio	(<Nfagio)	'broom'
		upande	_p^hande	(<Npande)	'side'
	b.	ufa	nyufa	*Nfa/*fa	'crack'
		ushi	nyushi	*Nshi/*shi	'eyebrow'
		uta	nyuta	*Nta/*t^ha	'bow'

The absence of the class prefix in plural forms in (6a) is due to the diachronic *N* deletion described in (5). It apparently affects the intermediate forms. Keeping the *u* in the plural formation of nouns in (6b) is a type of disyllabic minimum requirement for Swahili nouns. *N.CV* forms are another possibility for the plural forms, but they are not actual forms. There could be some disfavor toward word-initial voiceless prenasalized consonants in Swahili. The easiest way to avoid that structure is to keep the available singular prefix *u*.

Cliticization is one of the ways in which the size of a form can be augmented. Cliticization of the emphatic copula and a pronominal clitic, both of which are monosyllabic, removes potentially monosyllabic words from the Swahili lexicon. In example (7), *ndi* is the monosyllabic emphatic copula, and *mi, si,* ... *yo* are pronominal elements, either of person or other classes.

(7)	a.	Classes (personal)	1 (sg.)	2 (pl.)	
		1st	ndi-mi	ndi-si	'It' is I/we!'
		2nd	ndi-we	ndi-nyi	'It' is you!'
		3rd	ndi-ye	ndi-o	'It' is he/she/they!'
	b.	Other Classes			
		3/4	ndi-o	ndi-yo	'It's that/those!(cl.3/4)'
		5/6	ndi-lo	ndi-yo	'It's that/those!(cl.5/6)'
		–	–	–	–

Optional cliticization also exists in Swahili morphology. They are the negative copula *si* plus an optional clitic, or the conjunction *na* and an optional clitic, as seen in (8). The final vowels, *o* and *e* in *sio*, *sie* and *nao*, are optional elements. The negative copula *si* and the conjunction *na* are function words and they are not necessarily disyllabic, but the optional cliticization also makes these words disyllabic.

(8) a. Kanama sio muradi...(<- *si* 'is not') 'But lo! it is no use..'
b. Mimi sie mwivi...(<- *si* 'is not') 'I am not the thief...'
c. Kambe nao watambule...(<- *na* 'and') 'Speak and let them understand ...'

The remnants of a lost Swahili prefix system are found in disyllabic words. Swahili nouns are classified among sixteen classes, depending on the overt or covert prefixes and meanings. Previously, more noun classes existed than now, and some of them have been lost. One of the lost is class prefix 12 *ka*. The agreement system of noun class 12 has been lost in Swahili morpho-syntax, but a few nouns with *ka* have been retained.

(9) a.	kale	ka-le	(cl.12-that)	'once there'	ku-le
b.	kanywa	ka-nywa	(cl.12-drink)	'beverage'	ki-nywa
c.	kawe	ka-we	(cl.12-stone)	'pebble'	ki-ji-we
d.	kamwe	ka-mwe	(cl.12-one)	'one'	moja

The class 12 prefix *ka* is no longer productive in Swahili and is a historical remnant of the former agglutination for the sake of disyllabicity of the monosyllabic stems *le*, *nywa*, *we* and *mwe*. Most of the nouns found with class 12 *ka* are maximally disyllabic, and their usage is restricted. In many cases they are replaced by the forms in the last column. This means that the *ka* has been retained for the purpose of the fulfillment of the disyllabic minimality requirement.

We can also find stems with epenthesis, double affixes, and frozen elements to monosyllabic stems. The affixes can hardly be detached from the stems to which they are affixed. The affixed bases, rather than the original base forms, are found in the Swahili lexicon.

(10) a.	wa-nne	ne	(cl.2-cl.9-four)	'four'
b.	fa-a	f(w)a	(fit-epenth.)	'fit'
	f-an-an-a	f(w)a	(fit-rcp-rcp)	'resemble'
c.	ki-vita	ta	(cl.7-cl.8-throw)	'battle'
	ku-kuta	ta	(cl.15-cl.15-throw)	'come upon'
	ku-kutana	ta	(cl.15-cl.15-throw-rcp)	'meet'
d.	ki-lifu	fu	(cl.7-cl.5-stomach)	'stomach'

e.	chini	chi	(ground-locative)	'under'
	pwani	pwa	(dry up-locative)	'(on the) coast'
f.	manukato	(n)to	(smell-good)	'perfume'
	nyamafu	fu	(meat-dead)	'dead animal'
	kamilifu	fu	(exact-complete)	'perfectly'

The reason that they attract affixes as frozen forms is that they are too small, and they are always found with some affixes. The form with an affix has been taken for the new base stem. In (a), *ne*, the original stem for 'four', is found as *n-ne* in counting, and it is mistaken for the original stem. The class 2 prefix *wa* is affixed to the new frozen disyllabic stem *n.ne*, which results in *wa-nne*. For (b,c), the verb *fwa* and *ta* are found only in the forms above. These two verbs are so small that they are augmented with epenthesis or affixation. Again, the augmented forms are counted as base forms and they can obtain an affix, which creates forms with double affixes. The same principle applies to example (d). In (e), *ni* is the locative marker and is affixed to a monosyllabic stem. It cannot be removed nor replaced by the preposition *katika*. For example, *chini* 'under' and *pwani* 'in the coast' cannot be replaced by *katika chi* and *katika pwa*; *darasani* 'in the classroom' can be replaced by *katika darasa*. In addition, the *ni* in *pwani* is not normal, since the locative is for nouns; *pwa* is a verb here. The stem *pwa* is also found with epenthesis or with a class prefix, as in *pwaa* or *mapwa*. The monosyllabic adjectives in (f), the underlined parts, have been frozen only to these words and are hardly found with other words. This phenomenon reduces the number of productive monosyllabic adjective stems, all of which are also found with other prefixes for a disyllabic requirement.

Another piece of evidence supporting the disyllabicity requirement in Swahili morphology is found in nouns. We find a significant number of words composed of two syllables, in which each syllable is phonemically identical. Monosyllabic reduplication in Swahili produces common nouns and pronouns as in (11), and they constitute an integral part of the Swahili nominal vocabulary, unlike some other languages, where these types of words are found in baby-talk. This type of reduplication yields only disyllabic forms, except for some ideophonic words.[3]

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[3] There are a few abbreviated names with the first two syllables, such as

(11)	nyanya	'tomato'	lulu	'pearl'
	papa	'shark'	popo	'bat'
	mimi	'I'	wewe	'you (sg.)'

Another piece of evidence for the disyllabic requirement can be found in abbreviated names in Swahili. In the standard (Unguja or Zanzibar) dialect, abbreviated names are from the last two syllables of the source words as in (12).

(12)	full name	abbr. name	full name	abbr. name
	Abdallah	Dula	Abdulla	Dula
	Fatuma	Tuma	Hamisi	Misi
	Khadija	Dida	(Moh)amedi	Edi

From all these pieces of evidence, a disyllabic minimal word can be proposed for Swahili, which is schematized in (13).

(13) Minimal Word = Foot (Min-Wd)
Lexical words are minimally disyllabic feet.

3. Constraints in Verbs

This section will show how an optimality analysis is applicable in accounting for the minimality effect in Swahili morphology. The interaction between the Min-Wd constraint and other constraints will be the main issue. To begin with the conclusion, the minimal word of disyllabicity can serve as a constraint which is hardly violated in Swahili morphology.

The first thing to account for is the optimization of the monosyllabic verbs with a required prefix, which were described in (1)[4]. As is shown in constraint table (14), multi-syllabic verbs do not need the infinitive marker *ku*, and if it is added it will violate the constraint called Dep-IO, which states that output elements should come from (be dependent on) input elements; any outside element is not allowed. Both candidates observe the Min-Wd constraint.

Abdu for *Abdullah*. In a Kenyan Swahili dialect, abbreviated forms are more commonly from the first two syllables of the source words.

[4] The data cited in sections 3 and 4 are from section 2, and they are given reference numbers. *W* in constraint tables indicates optimal (winning) candidates.

(14) ninasoma 'I am reading' (1b)

	/nina-soma/	Min-Wd	Dep-IO
a. W	nina-soma		
b.	nina-ku-soma		*!*

The example in (15), however, requires *ku*. The reason is that the verb stem *la*, by itself, violates the minimum size, Min-Wd. In spite of its violation of Dep-IO, the form with the prefix is the winning candidate since it observes the higher-ranked Min-Wd.

(15) ninakula 'I am eating' (1a)

	/nina-la/	Min-Wd	Dep-IO
a.	nina-la	*!	
b. W	nina-kula		**

In this constraint table we can see the ranking of Min Wd over Dep-IO. In this ranking epenthesis can be expected to occur to meet the disyllabic minimum requirement.

The effect of the minimal word constraint is also found in reduplication. Multi-syllabic verb stems do not copy the prefix in reduplication in (16). If the prefix *ji* also reduplicates, then it will violate the reduplicant size constraint called RED≤Stm, meaning that reduplicants should be the same as or smaller than the stem. There is no need of incorporating the prefix since the stem is big enough to meet the Min-Wd constraint.

(16) jipindapinda 'fold and fold' (2b)

	/ji-pinda-RED/	Min-Wd	RED≤Stm
a. W	ji-pinda-pinda		
b.	ji-pinda-jipinda		*!

The optimal form (16a) does not violate any of the above constraints, while the wrong form violates the reduplicant size constraint.

The ranking between Min-Wd and RED≤Stm will emerge in the following constraint table. In the reduplication of monosyllabic verb stems, a prefix is employed in order to make the reduplicant minimally disyllabic.

(17) mpempe 'Give him/her!' (3b)

	/m-pe-RED/	Min-Wd	RED≤Stm
a.	m-pe-pe	*!	
b. W	m-pe-mpe		*

In this constraint table, the ranking of Min-Wd over RED≤Stm is manifested. This ranking allows the prediction that when the stem is too small, it can be augmented, even though it makes the reduplicant bigger than the stem. Candidate (17a) is the losing candidate since it violates the higher-ranked constraint Min-Wd.

In addition to the constraints Min-Wd, Dep-IO and RED≤Stm, the onset requirement serves as an important constraint in reduplication. In reduplication of multi-syllabic verb stems, a prefix is incorporated when it is working as the onset of a syllable. For instance, an object prefix *mw* reduplicates in the reduplication of multi-syllabic verb stems, as in (18).

(18) mwonamwona 'see her/him' (3c)

	/mw-ona-RED/	Min-Wd	Onset	RED≤Stm
a.	mw-ona-ona		*!	
b. W	mw-ona-mwona			*

In this constraint table, both observe Min-Wd, but candidate (18b) violates the lowest-ranked constraint, while candidate (18a) violates the higher-ranked constraint Onset. The optimal form (18b) is the candidate which does not violate any higher-ranked constraint.

Another possible constraint is Max-Stm, which states that an onsetless vowel can stay by itself; it cannot be removed. In the following constraint table, the onsetless syllable in a multi-syllabic verb stem does not acquire an onset nor lose the onsetless vowel. To explain this phenomenon, we need a constraint called Max-Stm, which states that stem elements cannot be deleted. All three candidates observe Min-Wd.

(19) inukainuka 'rise up and up' (2a)

	/inuka-RED/	Min-Wd	Max-Stm	Dep-IO	Onset
a. W	inuka-inuka				**
b.	inuka-_nuka		*!		**
c.	inuka-kw-inuka			*!	*

Vowel-initial verbs reduplicate themselves and do not lose the initial vowel, as in candidate (19b) nor add an onset consonant, as in candidate (19c).[5] Constraint Onset is lowest-ranked, and the double violation of this constraint in candidate (19a) does not harm its wellformedness. The ranking of Onset in other languages is different from that of Swahili. For example, initial onsetless syllables are removed in Axininca Campa reduplication, e.g., *osampi-_sampi*, while they get an onset in Siswati reduplication, e.g., *osha-yosha*. As additional information, we do not see any ranking between Max-Stm and Dep-IO in the above.

The epenthesis in the passive formation of monosyllabic verbs can also be analyzed by the constraints introduced so far. The ranking of Min-Wd over Dep-IO, and that of Dep-IO over Onset, have been decided in (15) and (19), respectively. Candidate (20a) violates the minimal word constraint, and the rest violate Dep-IO since they have epenthesis. Candidates (d-f) also violate the Onset constraint. Candidate (b) doubly violates Dep-IO, but candidate (c) violates the Dep-IO constraint only once.

(20) pewa 'be given' (4a)

	/pwa/	Min-Wd	Dep-IO	Onset
a.	pwa	*!		
b.	kupwa		**!	
c. W	pewa		*	
d.	pwaa		*	*!
e.	pwea		*	*!
f.	apwa		*	*!

From the constraint tables from (14)-(20), we can propose the following ranking among the constraints in Swahili verbal morphology.

(21) Min-Wd >> Max-Stm, Dep-IO >> Onset >> RED≤Stm

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[5] *kw* is arbitrarily chosen for an onset, which is from the glidization of the infinitive marker *ku*.

4. Constraints in Nouns

In addition to general constraints, some special constraints are required in the analysis of Swahili nouns. The Min-Wd constraint is also important in nouns. First of all, the diachronic *N*-loss in nouns of classes 9 and 10 can be analyzed in the ranking of constraints. In multi-syllabic noun stems, the homorganic and prenasalized consonant loses its nasal part. Losing the *N* in these stems does not affect their violation of the Min-Wd constraint, since without *N* they still retain the same number of syllables. In constraint table (22), candidate *a* violates constraint NoNC^{-vd}, which can state that voiceless prenasalized consonants are not allowed. Candidate *c* violates Dep-IO.

(22) paka 'cat' (5a)

	/Npaka/	Min-Wd	Dep-IO	NoNC^{-vd}	Align-L
a.	Npa.ka			*!	
b. W	pa.ka				*
c.	Na.pa.ka		*!		

Candidate *b* meets the first three constraints, and its violation is the lowest-ranked Align-L, which states that a prosodic word should align its left edge with the left edge of the stem. This constraint disallows insertion or deletion to the left edge of the prosodic word. In multi-syllabic words, Min-Wd is always met; thus NoNC^{-vd} is another crucial constraint in Swahili.

Table (23) reveals dialectal differences with regard to monosyllabic nouns with a voiceless prenasalized consonant. All these candidates are found as actual forms in dialects (Nurse & Hinnebusch 1993). The current ranking is for candidate *a*, which is found in the standard dialect.

(23) nswi 'fish' (5b)

	/Nswi/	Min-Wd	Dep-IO	NoNC^{-vd}	Onset
a. W	N.swi			*	
b.	swi	*!			
c.	Nswi	*!		*	
d.	Ni.su		*!		
e.	si.i		*!		*
f.	i.Nswi		*!	*	*

The first two constraints are sufficient to determine the optimal form in the standard dialect, but for others we have to rerank, add or delete constraints, depending on the dialect, as can be seen in the following:
If the winner is:

a, then the ranking is Min-Wd, Dep-IO >> NoNC^{-vd}. It is found in such dialects as Unguja (standard), Mwiini, Pate and Siu.[6]

b, Dep-IO, NoNC^{-vd} >> Min-Wd. Found in Makunduchi, Vumba, Mtang'ata and Pemba.

c, Dep-IO >> NoNC^{-vd} >> Min-Wd. Additionally, it requires Align$^{\sigma}$ over NoNC^{-vd} to win candidate *a*, and requires Align-L over Min-Wd to win candidate *b*. Found in reconstructed Common Bantu.[7]

d, Min-Wd, NoNC^{-vd}, Onset >> Dep-IO. Found in Upper Pokomo.

e, Min-Wd, NoNC^{-vd} >> Dep-IO >> Onset. Additionally, requires Align-L over Onset to win candidate *f*, and requires Align$^{\sigma}$ over Dep-IO to win candidate *d*. Found in the Elwana dialect.

f, Min-Wd, NoNC^{-vd} >> Dep-IO >> Onset. Additionally, it requires Align-R over Onset to win candidate *e*, and requires Align$^{\sigma}$ over Dep-IO to win candidate *d*. Found in the Mwani dialect.

The interaction between the Min-Wd constraint and NoNC^{-vd} is also found in the plural formation of nouns with class prefix 11 *u*. First, an analysis of the augmentative plural formation in monosyllabic noun stems with *N* is found in constraint table (24).[8]

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[6] The Comoros dialect has *mfi* as the output. The inclusion of this form will require another constraint, such as Ident-Feature, which states that the output features should be identical to the input features.

[7] Align$^{\sigma}$: disallows resyllabification at the edge of the stem. It is *Align* in McCarthy & Prince (1993).

[8] The reason that the input form has *u* in parenthesis is that *u* is a class prefix, like *N*, and it is visible in plural formation. The same principle applies to (25).

(24) Nufa 'cracks' (6b)

	N(u)fa	Min-Wd	NoNC^{-vd}	Onset
a.	Nfa	*!	*	
b.	N.fa		*!	
c.	fa	*!		
d. W	Nu.fa			
e.	u.Nfa		*!	*

In the above constraint table, candidates *a* and *c* violate the Min-Wd constraint, and candidates *a*, *b* and *e* violate the no-voiceless-prenasalized-consonant constraint. Candidate *e* violates Onset too. The optimal candidate *Nufa* in (24d) does not violate any of the three constraints above, but it has two noun class prefixes, which could be a possible violation of a constraint; this will be clear in the next constraint table.

Constraint NoNC^{-vd} is a crucial constraint also in the analysis of the subtractive plural formation of nouns with multi-syllabic stems. The candidates (25a,b,c) observe both Min-Wd and Onset. Relatively higher-ranked NoNC^{-vd} eliminates candidates *a* and *b* in the competition for optimization. Candidate *d* can be removed by an additional constraint, called NoDCP, which states that no double class prefix is allowed. As additional information, the winning candidate's possible violation is Align-L.

(25) kuta 'walls' (6a)

	N(u)kuta	Min-Wd	NoNC^{-vd}	Onset	NoDCP	Align-L
a.	Nku.ta		*!			
b.	N.ku.ta		*!			
c. W	ku.ta					*
d.	Nu.ku.ta				*!	
e.	u.ku.ta			*!		

In the optimization of candidate *c* in this constraint table, we can see the rankings of NoNC^{-vd}, Onset and NoDCP over Align-L.

From the constraint tables in (22)-(25), we can propose the following constraint ranking for Swahili nominal morphology.

(26) Min-Wd>> Dep-IO>> NoNC^{-vd}>> Onset >> NoDCP>> Align-L

5. Conclusion

The exceptional behavior and the dialectal variation in historical and synchronic Swahili phonology and morphology can be accounted for by the imposition of a simple disyllabic minimum requirement, along with a set of ranked constraints as in optimality theory.

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Aspectual Shifting in the Perfect and Progressive

Laura Wagner

1. The Question

The question that this paper addresses is, *Why can you have a perfect of a progressive (1) but not a progressive of a perfect (2)?* The account that this paper will give in answer to this question will be primarily semantic: I will argue that it is the aspectual constraints imposed by the perfect and progressive operators that dictate their scope interaction.[1]

(1) The president has been visiting Philadelphia.
(2) * The president is having visited Philadelphia.

2. Aspectual Shifting and Presupposition Accommodation

It is well known that the aspectual type (i.e., situation aspect in the terminology of Smith 1991) of a sentence must be calculated from various elements. The verb and its arguments (including the quantificational properties of those arguments), particles, and adjuncts all contribute to the aspectual type. For example an atelic sentence (3a) may become telic as a result of arguments (3b) or adjuncts (3c); or the telicity may be emphasized by means of a particle (4). Further, a telic sentence (5a) may become atelic given, for example, different quantificational force on its object (5b).

(3) a. The chicken ran.
b. The chicken ran a mile.
c. The chicken ran across the road.
(4) The girl ate up a sandwich.
(5) a. The child drank a glass of milk.
b. The child drank milk.

---

[1] My thanks go to Sabine Iatridou, Mark Steedman, Beverly Spejewski, Matthew Stone, Angelick van Hout and the members of Sabine's aspect seminar in Spring 1996.

These examples manipulate parts of the thematic structure of the sentence and their aspectual influences seem to stem from more general aspectual properties of argument structure and lexical semantics. Precisely how these aspectual influences get integrated into a theory of argument structure is a matter of some debate (Olsen, 1994; Van Hout 1996 among others). This debate is somewhat outside the scope of this paper and I will dwell on it no further.

A somewhat different case of aspectual shifting is seen with adverbials. Certain adverbials are used as tests to determine aspectual type. Thus, in Dowty (1979) we find that *in X time* adverbials are felicitous only with telic sentences (6) and *for X time* adverbials are felicitous only with atelic sentences (7).

(6) a. Maggie built a house in an hour.
b. * Maggie built a house for an hour.
(7) a. * Maggie ran around in an hour.
b. Maggie ran around for an hour.

The tests are used frequently (Vendler, 1967; Dowty 1979; Smith 1991, e.g.) and they seem to get at a valid intuition. However, as is periodically noted, these tests are very flexible—it's not really the case that 6b and 7a are ungrammatical or even uninterpretable, it's that they don't mean the same things as 6a and 7b. Moreover, the difference in meaning is highly systematic: 6b has an atelic interpretation and 7a has a telic one.

Following Moens 1987 and Moens and Steedman 1988, I propose that the right way to think about these adverbials is not as inert elements that select sentences of a particular aspectual type, but as active elements that can force aspectual coercion. We might even say, following the terminology of pragmatics (e.g. Heim 1988) that adverbials *presuppose* they will be applied to sentences of a particular aspectual type and that when they are not, the sentences shift to accommodate the presupposition. Presupposition accommodation *feels* like coercion and is highly context dependent. Thus, if we support a sentence with a plausible context, the accommodated interpretation also seems plausible. For example, the *for X time* adverbial presupposes that it applies to an atelic predicate; it is bad with (8a) but not with the context supplied in (8b).

(8) a. ?? Maggie died for an hour.
b. Maggie died for an hour each night on stage.

Moreover, we can get accommodation of different sorts. For example, the *in X time* adverbial presupposes that it applies to a telic predicate. When it is given an atelic predicate, accommodation can happen in a variety of ways. In (9a), the atelic sentence is given an implicit endpoint (supplied by the context); in (9b), the adverbial is made to apply to the preparatory time period that is bounded by the event itself. The precise means of accommodation is determined by context.

(9) a. Unwilling to start right after the priest left, Maggie tortured the prisoner in a few minutes.
b. Showing her skill with the thumbscrews, Maggie tortured the prisoner in a few minutes.

2.1. The Progressive's Presupposition

Moens 1987 argues that the progressive operator requires an activity (+durative, –telic event) as its input. In my terms, that means that the progressive presupposes it applies to an activity. Notationally, I will indicate this input presupposition as in (10).

(10) PROG (activity)

Of course, progressives operate over events of all types but when they are applied to non-activities, those events must accommodate to meet the presupposition. We can view the well known semantic effects of the progressive, then, as various forms of presupposition accommodation. These arguments are laid out in detail in Moens 1987, but I will go over a few examples briefly here.

(11) Maggie was tapping on the table.
(12) Maggie was building a house... but she didn't finish it.
(13) Maggie was winning the race... until the last lap.

In (11–13) are examples of, respectively, a punctual (–durative, –telic), an accomplishment (+durative, +telic) and an achievement (–durative, +telic) in the progressive. Each of these differs in features from the activity type and each undergoes an accommodation process. The punctual (11), which needs to accommodate along the durativity dimension, gives an iterative interpretation; the accomplishment (12), which needs to accommodate along the telicity dimension, loses its entailment of completion (the so-called imperfective paradox); the achievement (13) which needs to accommodate along both dimensions, is interpreted as meaning the preparatory process to the event. Thus the varied semantic effects of the progressive are traced to a common source—accommodation to meet the input requirement of being an activity.

2.2. The Perfect's Presupposition

The perfect operator also places a constraint on its input, though a much looser one: the perfect presupposes that it applies to a stage level predicate (SLP), as noted in (14) below.

(14) PERF (slp)

SLPs include all non-stative aspectual types as well as many stative ones. They are, roughly speaking, transitory properties in contrast to individual level predicates (ILP) which ascribe more or less permanent properties. The idea that the perfect presupposes an SLP is compatible with the analysis of the perfect in Smith 1991 and fits in more generally with the claim in Iatridou 1996 that the complement of the possessive *have* is an SLP.

Because so many aspectual types are already SLPs, there are few times when accommodation will be necessary. The only exception to this, of course, is ILPs; we can see in (15) and (16) that the perfect of an ILP sounds odd in isolation, but with a plausible context supplied, we can re-interpret the predicates as SLPs.

(15) a. ?? Maggie has been tall.
b. Maggie has been tall for many months now.
(16) a. ?? Bill Clinton has been president.
b. Jimmy Carter has been president.
c. Bill Clinton has been president for 4 years now.

The accommodation process of an ILP into a SLP seems to most often involve bounding the ILP, either by introducing a beginning point or an endpoint. Having either a beginning or ending transition point in the predicate seems to be sufficient accommodation. Thus, in (15b) the ILP accommodates by introducing a beginning point and in (16b and c) an endpoint is introduced. Since this is a context driven process, note that we can use real world knowledge about transition points to accommodate the predicate, as in (16b): knowing the fact that Carter is no longer president provides sufficient context to view *be president* as an SLP.

3. Aspectual Assertions of the Perfect and Progressive

The flip side of a presupposition is an assertion and in this section, I will examine the aspectual assertions of the perfect and progressive. These operators are located outside the VP (in IP, or TP, or AGRP, or...) and they have sentence level scope. Not surprisingly, then, the aspectual assertions (or output conditions) they make are true of the sentences that contain them. This requires us to recognize the aspectual class of whole sentences.

3.1. The Progressive's Assertion

Progressive sentences are states, as noted in (17).

(17) $[PROG(activity)]_{state}$

Vlach 1981 offers several conceptual reasons to believe this, including the fact that constructions with the main verb *be* typically are stative as well as the fact that the progressive is historically related to a stative locative construction. Dowty 1979 and Smith 1991 offer a slightly more concrete test: progressive sentences have the subinterval property characteristic of states.

Perhaps the strongest objection to this claim is that progressive sentences have a 'dynamic' character that sets them apart from an average state. I have two responses to this objection. First, this may simply mean that progressive states are just a subset of states, namely the SLP subset. Second, it may be that the aspectual quality is not the entire semantic effect of the progressive, but the fact that progressive sentences are states plus some additional property does not undermine the basic fact that they are indeed states. Moens 1987 gets around this problem by defining the category 'dynamic state' which is intended to capture the particularity of progressive states. For this paper, all that is necessary is that the progressive output a state that is an SLP.

3.2. The Perfect's Assertion

The perfect construction was apparently used historically to ascribe properties; that is, the subject has (or possesses) the property in the predicate. Intuitively, this is still part of the perfect's meaning (and is, I think, the intuition behind Smith 1991's *participant property* of the perfect). Moreover, the perfect (synchronically, at least) ascribes a particular kind of property—namely, an individual level one. My notation for this is shown in (18) below.

(18) $[PERF(slp)]_{ilp}$

Sentences in the perfect indeed pass many of the standard tests for ILPs (cf. Kratzer 1995 for relevant tests). For example, ILPs are bad as modifiers in existential sentences and so are perfects:

(19) a. There is a girl in the yard/??intelligent.
b. ?? There is a girl having been in the yard.

ILPs are bad in perception sentences, and so are perfects:

(20) a. I saw Maggie asleep/??a linguist.
b. ?? I saw Maggie having been to Boston.

In absolutive constructions, ILPs yield a causative (and not temporal) reading and so do perfects:

(21) a. Being tall, Maggie can reach the ceiling.
= because she is tall
b. Standing on a chair, Maggie can reach the ceiling.
= when she stands on a chair
c. Having been to Boston, Maggie thinks it is swell.
=because she has been to Boston

Perfect sentences do fail some of the ILP tests, however. ILPs yield generic interpretations on bare plural subjects, but perfect sentences do not:

(22) a. Bears hibernate in winter (generic on bears).
b. Bears have eaten my petunias (not generic on bears).

In fact, the ability to cause genericity on a bare plural subject with a perfect seems to depend primarily on properties of the predicate *before* the perfect applies. Thus (23) does have a generic interpretation:

(23) Bears have hibernated in Yosemite park since the stone age.

I have argued above that the adverbial *since the stone age* coerces the ILP *hibernate* into a SLP and is necessary in order to accommodate the presupposition of the perfect. However, the bare plural seems able to look within the accommodation and find the ILP originally present, and thus permits the generic reading. This fact suggests one of two things is going on. It is possible that coercion or accommodation is at least a partially transparent process. Or, it is possible that genericity is determined before the perfect operator applies. Since we know that aspectual class must be determined from the entire sentence, including the subject, the perfect (and progressive) presuppositions would have to take all parts of the sentence into consideration. If genericity is determined by the presence of a generic operator, I would argue that this operator has lower scope than the perfect operator.

Another test for ILPs that perfect sentences do not pass is even more problematic. ILPs are bad in the *when*-clauses with definite NPs but perfects are just fine:

(24) a. When Mary knows French, she knows it well.
b. When Mary has been to Boston, she has been to it in style.

I don't have a way to account for this fact, but it is interesting to note that perfect sentences in this context yield only the episodic reading; that is, in (24b), Mary is no longer in Boston—the sentence refers to previous episodes of her going to Boston. There is a certain intuitive sense to getting this reading. After all, the episodic reading of the perfect is the one most likely to have an event variable to contribute. However, I have no way to integrate this fact into the current story I am telling. I will therefore put this question aside for now.

An additional objection to the ILP analysis of perfect sentences is inspired by the following kinds of examples:

(25) I have walked the dog (today).
(26) I have lost my keys... but now I've found them.

In both these cases, it seems odd to say the sentence ascribes an ILP since the property disappears so quickly. In (25), the property of *having been walked* lasts only until the next morning when the dog must be walked again. Similarly in (26), the property of *having been lost* is over once the keys are found. I do not think this is a particular problem for the current analysis for two reasons. First, it can be avoided formally by giving the perfect operator scope over temporal adverbs (as in Klein 1994), present and implied. Thus the ILP in (25) is *has been walked today*; if we replace *today* by a non-deictic expression, the fact that this predicate is an ILP can be seen more clearly: *has been walked on April 1st, 1992* is not a property that goes away as the day wears on. A similar trick can be pulled with (26). These examples, I think, raise a larger question about the nature of ILPs in general. If ILPs are supposed to be permanent properties, then why do some of them end? This problem has been noted before (by Kratzer, I think): for example, *being a butcher* is an ILP and *being angry* is an SLP even though some people may be angry for much more of their life than they are a butcher. The fact that perfect sentences are subject to this same problem only means that they inherit the theoretical difficulties of being an ILP as well as the explanatory advantages.

4. A Partial Answer

From the input and output conditions of the perfect and progressive, we can answer the question this paper originally posed: why can you have a perfect of a progressive but not a progressive of a perfect? In short, the output of the progressive is compatible with the input of the perfect but the reverse is not true. The assertion, or output, of the progressive is a (dynamic) state and this is compatible with the presupposition of the perfect (it requires an SLP as input) so all is well (27). By contrast, the output assertion of a perfect is an ILP which is not compatible with the progressive's presupposition of applying to an activity (28). Thus, the perfect must have scope over the progressive to insure that the input-output conditions are met.

(27) $[PERF([PROG(activity)]_{\mathbf{state}})]_{ilp}$
dynamic states are a subset of SLP

(28) $*\,[PROG([PERF(slp)]_{\mathbf{ilp}})]_{state}$
ILPs are not a subset of activity

But what about presupposition accommodation? In section 2, I discussed how adverbials and operators like the perfect and progressive could coerce their input to meet their presuppositions. Why is this not possible here? One possible argument is that in fact such accommodation is possible in principle, but that the context that would require it is so unusual that we never (or hardly ever) encounter it. So, for example, this account would predict that (29) would be acceptable.

(29) Right now Maggie is doing an acting exercise. She is pretending to live through all the stages of life of Susan B. Anthony. **Right now, she is having been in jail for 3 days after a protest.**

I find this judgment hard to get, though it is unclear whether the source of the difficulty is the strangeness of the context of the strangeness of the form. In the following section, I will propose that the output of the perfect and progressive can *not* undergo accommodation and will suggest a possible syntactic-semantic explanation.

5. Limits on Aspectual Shifting

Let us suppose, then, that the aspectual output assertions of the perfect and progressive do not shift to accommodate other presuppositions. Why not? Intuitively, you shouldn't be able to mark something explicitly and then override it leaving no trace behind. The perfect and progressive operators are large pieces of morpho-syntax and their aspectual effects shouldn't be completely eliminable.

In support of this point, I note that perfects of progressives have a characteristic reading which seems to reflect the consistent contribution of the progressive (cf. also Moens 1987).

(30) Maggie has been visiting Boston/knocking on the door/eating a cake.

In the examples in (30), the *visiting Boston, knocking on the door*, and *eating a cake* are happening right up to the moment of speech for what Comrie calls the 'perfect of persistent situation'. A progressive under the perfect seems to encourage, if not outright require this interpretation. The progressive does not need to shift its output (a state) to match the presupposition of the perfect (an SLP) since progressive states are a subset of SLPs, and it maintains its semantic relevance by imposing this characteristic reading on the perfect above it.

Looking at the reverse item the output assertion of the perfect (an ILP) does not meet the presupposition of the progressive (an activity) but shifting the ILP to an activity would completely eliminate the perfect's aspectual contribution. However, this predicts (incorrectly, I think) that a progressive of a perfect of an ILP will be better, because the ILP will shift to accommodate to the perfect and this shift will leave a residual trace of the perfect even after the progressive eliminates the perfect's assertion.

(31) Maggie is having been tall for several years now.

Again, I don't find (31) to be acceptable. If neither context (29) nor recoverability (31) is the limiting factor, perhaps it is the syntax of the perfect and progressive that is responsible. Diesing 1992 provides a syntactic framework that may make sense of this limit on aspectual shifting.

In Diesing's model, ILPs are distinguished from SLPs syntactically. ILPs create a control structure, in which the subject is base generated in the IP and controls a PRO subject in the VP. The SLP reading requires the subject of the sentence to be lowered into the VP at LF. This lowering operation is available to VP-internal subjects (which lower from Spec-IP to their base generated position) but not to ILP subjects (which already have a PRO in Spec-VP). Since the perfect outputs an ILP, it seems reasonable to suppose that the perfect *have* projects the control IP associated with an ILP. Once such a structure is in place, however, there is no way for any subject to get back into the VP since the Spec-VP will have a PRO in it. The problem then of putting a progressive over the perfect becomes twofold, as both the input to the progressive (an activity) and the output of the progressive (a state) are SLPs. Thus, the progressive doubly requires the subject to be lowered into the VP but of course such a lowering operation is blocked by the presence of the intervening perfect control structure.

In other words, once we have a supported control IP in place (supported because it is headed by the perfect have) we can't get rid of it. Such an IP, however, has semantic consequences which must be dealt with. The progressive operator has requirements in opposition to these consequences and so can not take scope over the perfect.

6. Conclusion

In this paper I have argued that both the perfect and the progressive have aspectual presuppositions on their input and aspectual output assertions. The progressive presupposes that it applies to an activity and it outputs a state. The perfect presupposes that it applies to an SLP and it outputs an ILP. I have argued further that although aspectual type often shifts to accommodate the presupposition of an adverb or operator, the output of the perfect and progressive operators do not participate in this accommodation process. Thus, the reason that we can have a perfect of a progressive is because the aspectual input conditions of the perfect (SLP) are compatible with the output conditions of the progressive (state); the reason that we can *not* have a progressive of a perfect is because the input conditions of the progressive (activity) are not compatible with the output conditions of the perfect (ILP).

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A Model-Theoretic Approach to A-Not-A Questions[1]

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1. Introduction

To form an A-not-A question for a simple declarative sentence like

(1) Zhangsan pao
Zhangsan run
'Zhangsan runs.'

what one needs to do is copy the verb *pao* (run) and place the negative *bu* between the two verb forms.

(2) Zhangsan pao bu pao?
Zhangsan run-not-run
'Does Zhangsan run or not run?'

Of concern to me in this paper is that the A-not-A question exhibits an intriguing, but hitherto unnoticed, property, viz., unlike a Y/N question, it cannot take a quantified NP in subject position. This paper is organized as follows: In section 2, I will first present the facts and then propose a model-theoretic analysis for them along the lines of Higginbotham (1993). In section 3, I will consider an

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[1] This is part of a longer paper presented at both the 21st Penn Linguistics Colloquium and the 16th West Coast Conference on Formal Linguistics. The issue addressed here is more general in that the A-not-A question is not only incompatible with a quantifier in subject position, but also incompatible with such quantifying elements as modal adverbs, frequency adverbs and focus particles. For a fuller discussion of the phenomena, see (Wu, 1997). I am deeply indebted to Norbert Hornstein for his help and guidance at every stage of preparing this article, without which it would not have come into existence in the first place. I would also like to express my thanks to Juan Uriagereka whose comments provoked me to think more carefully about some of the issues. Finally, I would like to thank the participants of the two conferences for their valuable comments and suggestions.

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apparent counterexample: an "A-not-A question" formed by reduplicating the copula instead of a main verb (henceforth B-not-B questions) is not subject to the above restriction. I will show that the B-not-B question and the Y/N question are of the same semantic type, and then provide an explanation for why they can be exempt from the above restriction.

2. A Model-Theoretical Analysis

In this section, I will first present the relevant facts and then take a quick look at how referential NPs differ from quantified NPs in terms of interpretation. I will further propose a semantic analysis of the A-not-A question along the lines of Higginbotham (1993) and Karttunen (1977). Finally, I will give a model-theoretic account of how the above restriction follows.

2.1. Facts

(3) a. ?meigeren dou pao bu pao?
everyone all run-not-run
'Does everyone run or not run?'
b. *you ren pao bu pao?
someone run-not-run
'Does someone run or not run?'
c. *mei you ren pao bu pao?
no body run-not-run
'Does nobody run or not run?'

(3a) in which the universal quantifier occupies the subject position is deviant, if not totally unacceptable. (I conjecture that this is because *meigeren* (everyone) is ambiguous between being a quantifier and a group-denoting NP, an issue I will return to in later discussion.) (3b,c), where the existential quantifier and its negative counterpart take the respective subject position, are completely unacceptable.

Note that the corresponding Y/N questions are perfectly acceptable. The question, then, is where this restriction comes from and why the same restriction does not apply to the Y/N question, to which I will turn in what follows.

2.1. Referential NPs Vs. Quantified NPs

On the model-theoretic view, to know the meaning of a sentence is to know what this sentence denotes, i.e., in what state of affairs this sentence can be true. To know the denotation of a sentence, one also has to know the denotations of its components. A simple sentence like *John runs*, for example, is made up of two components *John* and *run*. What does *John* denote and what does *run* denote? We can take *John* to denote an entity, some kind of thing, and *run* a set of things that run. To evaluate the truth-value of this sentence, we verify whether *John* is in the set of things that run. If it is, the sentence is true; otherwise it is false. A proper name like *John* is assigned a type $< e >$.

A very important insight, originating with Frege, is that a quantified expression, unlike a proper name, does not denote an entity. Rather, it denotes a set of sets. To evaluate the truth-value of a quantified sentence like *Everyone runs*, we need to verify each member in the people set to see if he or she is in the set of things that run until we exhaust every member in the set. If it turns out that every member of the people set is in the set of things that run, the sentence is true; otherwise it is false. In other words, we verify whether the people set is a subset of the runner set. In (4) Y denotes a set of people and X a set of runners and the sentence is true iff Y is a subset of X; otherwise it is false.

(4) EVERY (Y) (X) iff $Y \subseteq X$

To evaluate the truth value of an existentially quantified sentence like *Someone runs*, we verify each member of the people set to see if there is at least one member in the set of things that run. (5) is its verification procedure.

(5) SOME (Y) (X) iff $Y \cap X \neq 0$

Y denotes a set of people and X a set of runners. The sentence is true iff the intersection of Y and X is not empty. In other words, the sentence is true iff there is at least one member in Y that is in X; otherwise it is false.

To evaluate the truth value of a sentence involving a negative existential quantifier like *No one runs*, we go through each member of the people set to see if there is any in the set of things that run. (6) is its verification procedure.

(6) NO (Y) (X) iff $Y \cap X = 0$

Y denotes a set of people and X a set of runners. The sentence is true iff the intersection of Y and X is empty, that is, if no member of Y is in X; otherwise it is false.

So, unlike a referential NP, a quantified NP denotes a function from a VP denotation to a sentence denotation, namely, a set of sets; thus, it is assigned a type <<e,t>,t>. This distinction, as we will see, plays a crucial role in the proposed analysis of the restriction under discussion.

2.2. Where Does this Restriction Come From?

To see where this restriction comes from, let us first look at the semantic structure of an A-not-A question. Following Higginbotham's (1993) treatment of questions, I propose that an A-not-A question is a partition of the possible states of affairs into two mutually exclusive but jointly exhaustive cells, according to which the simple A-not-A question in (2) will have the partition in (7).

(7) {{Zhangsan pao} | {Zhangsan bu pao}}
Zhangsan runs Zhangsan does not run

To answer an A-not-A question we pick one of the cells as true and reject the other as false. In a sense, we make a choice between two complementary cells. To capture this in formal terms we may give the following logical form to (2) by employing Karttunen's analysis of questions.

(8) {P| E(c) (P=^ c ((Zhangsan → (pao / bu-pao)) & true (P))}

(8) is a set of true propositions such that there is a choice function c that applies to the output of mapping *Zhangsan* onto the predicate set *pao* (run) and its complement set *bu-pao* (not run).

An A-not-A question like (2) is well-formed because its subject is a referential NP, which, as noted above, denotes an entity, and mapping an entity onto the predicate sets as such gives us exactly two mutually exclusive and jointly exhaustive cells. The two cells represented in (7), for example, are mutually exclusive in that only one of them can be true, and they are also jointly exhaustive in that together they cover all the possible states of affairs. In other words, there is no third possibility in terms of whether *Zhangsan* runs or not. As such, we can properly apply the requisite choice function, the one picking one of the cells as true while rejecting the other as false.

However, when an A-not-A question takes a quantified NP in its subject position, this choice function cannot be properly applied. This is so for the following two reasons.

First, an A-not-A question having a quantified NP in its subject position, if interpreted, might partition the possible states of affairs into more than two cells. As noted earlier, a quantifier denotes a set of sets, and to interpret it we permute each member in the NP set and map them onto the predicate set sequentially. As a result, the set members might be split in that some of them belong to the predicate set and some to its complement set. Given a model having two members in the set, say, John and Mary, the partition may generate three cells in terms of whether or not they belong to the predicate set, say, *run*.

(8) a. Positive Cell: {John ran, Mary ran}
b. Negative Cell: {John didn't run, Mary didn't run}
c. Mixed Cell: {either John or Mary ran, but not both}

Second, the negation contained in an A-not-A form is morphological, combining with the following verb to form a complex predicate of some sort. This entails that the negation takes scope over the following predicate only, just like *un* in the word *unhappy*. Whether a negation takes narrow scope (over a predicate only) or broad scope (over an entire sentence) has no effect whatsoever on the interpretation of a sentence when its subject is a referential NP. However, when a subject is a quantified NP, it does have an effect on the interpretation of a sentence. For example, the following two formulae are logically different.

(9) a. $\neg\forall x\,(Px)$
b. $\forall x\,(\neg\,Px)$

(9a) says it is not the case that for every x, x belongs to the predicate set P; (19b) says for every x it is not the case that x belongs to the predicate set P. What is crucial for our analysis is that, since the negation contained in the A-no-A form takes narrow scope, the potential negative answer to a quantified A-not-A question like (3a) would be logically equivalent to (9b), not to (9a). Consider (10).

(10) a. meigeren dou pao
everyone all run
'Everyone runs.'
b. meigeren dou bu pao.
everyone all not run
(i) 'No one runs.'
(ii) *'Not everyone runs.'

(10a,b) are affirmative and negative answers to the A-not-A question in (3a), respectively. Note that the only possible interpretation of the negative answer in (10b) is as indicated in (i), which, if translated into a logical formula, would correspond to (9b). The affirmative answer in (10a), if translated into logical formula, would correspond to (11).

(11) $\forall x\,(Px)$

Crucially, the logical relation between (10a) and (10b) is what logicians call 'contrary'; and if two propositions are contrary to each other, both may be false.

Bearing this in mind, we are now in a position to see where the restriction comes from. Given the model described in (8), if the positive cell or the negative cell corresponds to the true state of affairs, we can give the affirmative answer in (10a) or the negative one in (10b), respectively, without invoking any interpretive problem. But, if the mixed cell happens to correspond to the true state of affairs, we are caught in a dilemma, for we can neither give the affirmative answer, nor can we give the negative one, since both turn out to be false in this situation. Consequently, we are not able to assign the requisite choice function, as this function requires that one of the possible answers be true and the other false. Thus, the two possible answers are not jointly exhaustive in that they leave the mixed cell uncovered.

In a similar vein, we can explain the unacceptability of the A-not-A question in (3c) whose subject NP is a negative existential quantifier. Again, given the partition in (8), if the positive cell corresponds to the true state of affairs, we can respond to it by employing the negative answer as indicated in (12).

(12) meiyou ren bu pao.
no one not run
'Everyone runs.'

If the negative cell corresponds to the true state of affairs, we can respond by employing the affirmative answer as indicated in (13).

(13) meiyou ren pao.
no one run
'No one runs.'

The problem is if the mixed cell happens to be true, neither of the two possible answers in (12) and (13) can truthfully represent it. As such, no answer can be given, and the requisite assignment of the choice function is therefore blocked.

The problematic situation with the A-not-A question in (3b) whose subject NP is an existential quantifier is reversed. The two possible answers are given in (14).

(14) a. you ren pao
someone run
'Someone runs.'
b. you ren bu pao
someone not run
'Someone does not run.'

If the positive cell holds true, we can give the affirmative answer in (14a); if the negative cell holds true, the negative answer in (14b), though both are weak assertions with respect to the situations they represent. What poses a problem is the situation in which the mixed cell holds true. In this case both the affirmative and the negative answers would be true: the former would be true because one of the two members belongs to the set of things that run; the latter would be true because one of the two members belongs to the set of things that don't run. As a consequence, the two answers are not mutually exclusive and the requisite choice function thus cannot be assigned, for this function is intended to reject one of the two possible answers as false while picking the other as true.

In short, the semantic anomaly of A-not-A questions like (3) is caused by the fact that they partition the states of affairs into more than two cells and therefore the two possible answers cannot be jointly exhaustive or mutually exclusive.

At this point, the natural question to ask is why Y/N questions do not suffer from this restriction. I will defer this discussion until Section 3.

2.3. Some Further Issues

Some further evidence that can be brought to bear on this issue is the following contrast:

(15) a. tamen pao bu pao?
they run-not-run
'Do they run or not run?'
b. naxie xuesheng pao bu pao?
those student run-not-run
'Do those students run or not run?'
(16) a. ?tamen dou pao bu pao?
they run-not-run
'Do they run or not run?'
b. ?naxie xuesheng dou pao bu pao?
those student all run-not-run
'Do those students run or not run?'

In both (15) and (16) the subject is a group-denoting NP. While the examples in (15) are perfectly acceptable, those in (16) in which the group-denoting subject is followed by an extra *dou* (all) are deviant.

There is not much to say about the acceptability of (15) except to point out that a group-denoting NP by itself is nonquantificational, i.e., to interpret it we do not go through each member in the group, rather, we take the group as a whole and map it onto the predicate set in the same way as we do with a proper name. Let us take (17) for illustration.

(17) a. Everyone runs.
b. They run.

To interpret (17a) we permute the NP set and map its members onto the predicate set sequentially. For the sentence to be false it suffices to have only one of the members in the NP set that does not belong to the predicate set. To interpret (17b) we map the group denoted by *they* onto the predicate as a single entity. Thus, for the sentence to be false, it has to be the case that none of the members in the group runs. What this means is the group members cannot be split like the set members. Given this, we can conclude that the examples in (15) are good for the same reason that (2) is good.

The question which concerns me is where the deviance detected in (16) comes from. To answer this question, let us consider what *dou* contributes to the semantics of a group-denoting NP.

(18) a. tamen mai le yi ben shu
they buy ASP one CL book
'They bought a book.'
b. tamen dou mai le yi ben shu
they all buy ASP one CL book
'They each bought a book.'

(18a) and (18b) are identical except that the latter has an extra *dou.* As indicated by the English translation, *dou* adds distributivity to the interpretation of a sentence. Thus, (18b) means each group member bought a book, and if there were three members in the group, then there were altogether three books being bought. The *dou*-less version in (18a), however, can only mean that they, as a group, bought one and only one book. This suggests that *dou,* somehow, turns a group-denoting NP into a universal quantifier. If this is what happens, then the deviance in (16) is expected on the present analysis.

3. A Counterexample?

As noted at the outset, forming an "A-not-A question" by reduplicating the copula *shi* (be), instead of a main verb (henceforth B-not-B questions), will render all the otherwise unacceptable sentences acceptable. I will argue that the negation in a B-not-B question is sentential, which enables it to avoid the restriction in question.

3.1. B-Not-B Questions

Let me present the facts first.

(19) a. shi-bu-shi meigeren dou pao?
be-not-be everyone all run
'Is it the case or not that everyone runs?'
b. shi-bu-shi you ren pao?
be-not-be someone run
'Is it the case or not that someone runs?'
c. shi-bu-shi meiyou ren pao?
be-not-be no one run
'Is it the case or not that no one runs?'

By contrast to (3), the B-not-B questions in (19), though having quantified NPs in subject position, are perfectly acceptable.

3.2. Why is the B-Not-B Question Different?

Why can the B-not-B question be exempt from the restriction we have discussed so far? To see where the answer lies, let me first point out two crucial facts with regard to the B-not-B question. First, as shown in (19), the be-not-be form precedes a quantified subject NP, if not, unacceptability ensues:

(20) a. *meigeren dou shi-bu-shi pao?[2]
everyone all be-not-be run

---

[2] The be-not-be form can go between *meigeren* (everyone) and *dou* (all):
a. meigeren shi-bu-shi dou pao?
everyone be-not-be all run

b. *you ren shi-bu-shi pao?
someone be-not-be run
c. *meiyou ren shi-bu-shi pao?
no one be-not-be run

In contrast, if the subject is a referential NP, the be-not-be form can either precede or follow it:

(21) (shi-bu-shi) Zhangsan (shi-bu-shi) pao?
be-not-be Zhangsan be-not-be run
Is it the case or not that Zhangsan runs?

Under the generally accepted assumption that Chinese surface ordering reflects its quantifier scope I take this to mean that the negation contained in the be-not-be form must take scope over the quantified subject NP.

The second important fact is that the copula *shi* (be) used to form the be-not-be complex is used as a tag to answer a Y/N question in Chinese. What this suggests to us is that the be-not-be complex is formed by conjoining both the affirmative and negative tags. What does a tag do? If we think of a tag as a sentential operator, then, an affirmative tag is an affirmative operator that binds a proposition that follows; likewise, a negative tag is a negative operator that binds the same proposition. Given the fact that the be-not-be form is nothing but a conjunction of the affirmative and negative tags, I suggest, along the above lines, that to interpret a B-not-B question, we assign a choice function to two complementary operators, which means we choose between two complementary sentences. I propose the logical form in (22) for the B-not-B question in (19a).

(22) {P| E (c) (P= ^ (c(y ∨ n) meigeren dou pao) & true(P))}
everyone all run

But, this does not affect the generalization made here if the real universal quantificational force is thought of as coming from *dou* rather than *meigeren*, an assumption that has its validity, as *meigeren* can never appear without *dou*.

(22) is a set of true propositions P such that there is a choice function **c** that applies to the two sentential operators **y** (affirmative) and **n** (negative). Either one of them can be chosen to bind the proposition that follows. If this analysis is correct, then it explains why a B-not-B question can be answered by employing either the affirmative tag *shi* (be) or the negative tag *bu-shi* (not be) without necessarily repeating the propositional content, assuming that the propositional content that either sentential operator ranges over is implicitly understood.

It looks like the B-not-B question is semantically similar to the Y/N question rather than to the A-not-A question. First, both the B-not-B question and the Y/N question can be, or rather, must be answered by employing either the affirmative tag or the negative tag, but the A-not-A question cannot. Second, if a tag is a sentential operator, as I claimed above, then in answering a Y/N question, we will do the same thing as we do for a B-not-B question. That is, we allow a sentential operator, either affirmative or negative, to have broad scope over an entire sentence, and for that matter, over a quantified expression contained therein. Consider how you answer a Y/N question like (23) negatively .

(23) Does everyone run?

The appropriate one would be (24a), not (24b).

(24) a. No, not everyone runs.
b. ?No, no one runs.[3]

For a similar reason, the appropriate negative answer to the B-not-B question in (19a) would be (25a), not (25b).

(25) a. bu, (bu shi meigeren dou pao).
no, not be everyone all run
'No, (not everyone runs).'

---

[3] The oddness comes from the fact that it somehow challenges the presupposition that the question has.

b. *bu, (meigeren dou bu pao).
no, everyone all not run
'No, (no one runs).'

In both the appropriate answers the negation takes scope over the quantifier, which, as we will see shortly, is crucial to the proposed solution.

In short, the B-not-B question and the Y/N question are of the same semantic type except that the former overtly realizes the affirmative and negative tags and, in a sense, it wears its logical form on its sleeve. If this grouping is correct, then whatever explains the B-not-B question can be carried over to the Y/N question.[4]

With these crucial points in mind, we are now in a position to explain why the B-not-B question does not suffer from the restriction that the A-not-A question does.

Let us first consider the B-not-B question with a universal quantifier in subject position in (19a). Crucially, its appropriate negative answer as given in (25a) is contradictory, rather than contrary, of the affirmative answer given in (26).

(26) shi de, (meigeren dou pao).
be DE everyone all run
'Yes, (everyone runs).'

---

[4] It has to be pointed out that the B-not-B question and the Y/N question differ in their pragmatics. For example, as pointed out by Li and Thompson (1981), the Y/N question can be used to ask a rhetorical question, by which the speaker brings an assumption to the speech context.

(a) Zhangsan nandao hui shuo yingyu ma?
Zhangsan really can speak English Q
'Can Zhangsan really speak English?'

In (a) the speaker assumes that Zhangsan cannot speak English, and thereby expresses his disbelief of the fact that Zhangsan actually can speak English. Neither the B-not-B question nor the A-not-A question can be used in this context. This is perhaps because both the B-not-B and A-not-A question are neutral with respect to whether a contained proposition is true or false.

Logically speaking, for two propositions to be contradictory of each other they must be so related that if one is false the other must be true, unlike two contrary propositions that can be both false.

This, if correct, provides a ready answer to the question of why the B-not-B question does not suffer from the same restriction that the A-not-A does. Let us use the same partition in (8) for illustration. The negative answer in (25a) would cover the mixed cell rather than the negative cell, and the affirmative answer in (26) covers the positive cell. These two answers are mutually exclusive in that they can neither be both true nor be both false.

Mutually exclusive as they are, the question one might ask, given that there are three cells, is how these two answers can be jointly exhaustive, as clearly the negative cell still remains uncovered. If the negative cell happens to correspond to the true state of affairs, what shall we do? The answer to this question lies in the fact that the negative cell is not logically excluded by the negative answer given in (25a). That is, if the negative cell happens to be true, one can still use the answer in (25a) without making a false assertion of the situation. In other words, an assertion like (25a) is true of the situation described by the negative cell, though a weak one in the sense that by saying *Not everyone runs* one may implicate *Someone runs*. This implicature, however, can be canceled, as one can perfectly say (27).

(27) Not everyone, in fact no one, runs.

By adding *in fact no one*, the speaker does not contradict himself. Rather, he cancels the implicature that *not everyone* might otherwise generate. In view of this, I suggest that the negative answer as given in (25a) will cover the negative cell via implicature cancellation, and as such, the two possible answers are jointly exhaustive.

For the same reason, the B-not B question having a negative existential quantifier in subject position poses no interpretive problem. The two possible answers to (19c) are given in (28).

(28) a. shi de, (meiyou ren pao).
be DE no one run
'Yes, no one runs.'

b. bu shi, (you ren pao).
not be some one run
'No, someone runs.'

This time, the affirmative answer in (28a) covers the negative cell; the negative answer in (28b) covers the mixed cell. By canceling the implicature that *Someone runs* might otherwise generate, the negative answer can be used to cover the remaining positive cell. That is to say, though by saying (29a) one may implicate (29b), yet this implicature can be canceled as shown in (29c).

(29) a. Someone runs.
b. Not everyone runs.
c. Someone, in fact, everyone runs.

The analysis of the similar sort can be extended to the B-not-B question having an existential quantifier in subject position in (19b). The following are two possible answers to it.

(30) a. shi de, (shi you ren pao).
be DE, some one run
'Yes, someone runs.'
b. bu, (meiyou ren pao).
not, no one run
'No, no one runs.'

The affirmative answer in (30a) covers the mixed cell; the negative one in (30b) covers the negative cell. The remaining positive cell can be covered by the positive answer via implicature cancellation as shown in (29).

Summarizing, what makes the B-not-B question exempt from the restriction under discussion is that the negation contained in the be-not-be form is sentential, thereby the two possible answers would be contradictory of each other, and hence they are mutually exclusive. The requirement of joint exhaustiveness can be met via implicature cancellation.

4. Concluding Remarks

The formation of an A-not-A question is restrictive in that it is not compatible with a quantified NP in subject position. I argued, in the spirit of Higginbotham (1993), that an A-not-A question is a partition of the possible states into two mutually exclusive but jointly exhaustive cells, and to answer an A-not-A question one assigns a choice function to it to pick one of the cells as true and reject the other as false. The A-not-A question exhibits this restriction because the partition may generate more than two cells, and as such, the two possible answers are not jointly exhaustive or mutually exclusive, thus, blocking the proper assignment of the choice function. I also considered a possible counterexample in which the A-not-A complex is formed by reduplicating the copula, instead of a main verb. I argued that this so-called B-not-B question is free from the restriction because it is semantically similar to the Y/N question rather than to the A-not-A question. It has two mutually exclusive sentential operators (affirmative and negative) binding the entire proposition, and to answer it one must pick either one of them and reject the other. Thus, the two possible answers are contradictory of each other, and therefore mutually exclusive. They are also jointly exhaustive in that one of the two answers can be used to cover the remaining cells via implicature cancellation.

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Against Overt Particle Incorporation[*]

Jochen Zeller

1. Introduction

Due to their heterogeneous structural and semantic properties, verb-particle constructions are an interesting borderline case between morphology and syntax. In this paper I adopt the view that the particle and the verb are represented as two independent heads in the syntax, but I will argue against a rule of overt particle incorporation for German and Dutch. Instead, I will suggest that the particle and the verb combine at LF via abstract incorporation (cf. Baker 1988). This covert movement of the particle is required to allow "late insertion" of the lexical semantics of the particle verb at LF. Overt movement of the particle is not necessary and is therefore excluded by economy considerations (Chomsky 1995).

The idea that the particle is the head of a phrasal (Small Clause- or PP-) complement of the verb in syntax contrasts with approaches that assume that particle verbs are morphologically derived in the lexicon and inserted as complex verbal heads.[1] One standard argument against lexical analyses comes from examples like (1) (cf. Emonds 1972; Den Dikken 1995:38f.):

(1) (a) *John threw the ball right through the window*

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[1] Syntactic accounts have first been proposed by Emonds (1972), van Riemsdijk (1978), and Taraldsen (1983), and have been further elaborated by proponents of the Small Clause (SC-)-analysis (Kayne 1985; Hoekstra 1988; Grewendorf 1990; Mulder 1992; Den Dikken 1995, among many others). The lexical approach is adopted for example in Koster (1975), Booij (1990), Johnson (1991), Neeleman and Weerman (1993), Neeleman (1994), Stiebels and Wunderlich (1994), and Stiebels (1996).

(b) **John right threw the ball through the window*
(c) *John threw the ball right back/up/down*

The adverbial *right* can modify PPs, but not verbs, as shown in (1)(a) and (b). If (1)(c) was derived by excorporating the verbal part of a complex verbal head, as the lexical analysis predicts, we would expect ungrammaticality, since *right* would still modify a verb. However, (1)(c) is grammatical. This follows only from a syntactic analysis that associates the particles in (c) with a PP.

Furthermore, there is a conceptual problem with the lexical approach. Lapointe's (1979) Principle of Lexical Integrity or the Thesis of the Atomicity of Words (Di Sciullo and Williams 1987) are prominent formulations of the insight that syntactic rules cannot refer to parts of the morphological structure of a word. If particle verbs were morphologically complex words and V°-heads in syntax, the separation of the verb and the particle in examples like (1)(c) would violate these principles. Although several proposals have been made to deal with this problem in lexical frameworks (cf. Booij 1990; Stiebels and Wunderlich 1994; Neeleman 1994), I still consider it a major advantage of all syntactic approaches that the separation of the particle and verb does not require any additional stipulations.

In section 2, I show that the properties of particle verbs in German[2] follow straightforwardly from the assumption that the particle and the verb do not form a complex head in overt syntax. Some apparent counterevidence is addressed in section 3. The idea that covert particle movement is necessary to allow late lexical insertion, and some implications of my proposal for the relationship between the word formation component and syntax, are discussed in section 4.

2. The Covert Incorporation Approach

In German root clauses, the verb moves to Comp° to derive verb second (V2). The particle must be stranded:

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[2] In section 2, I restrict myself to a discussion of German data, since Dutch behaves in the same way in the relevant cases. However, I turn to Dutch in section 3.2 where I discuss Verb Raising.

(2)(a) *Peter schließt die Tür ab* (**Peter abschließt die Tür*)
Peter locks the door Prt

(b) *Peter trinkt sein Bier aus* (**Peter austrinkt sein Bier*)
Peter drinks his beer Prt

In embedded clauses, the verb is in clause final position (assuming that German is SOV), and the particle and verb are adjacent:

(3)(a) *daß Peter die Tür abschließt*
that Peter the door Prt-locks
(b) *daß Peter sein Bier austrinkt*
that Peter his beer Prt-drinks

It has been argued (cf. van Riemsdijk 1978; Grewendorf 1990) that whenever the particle is adjacent to the inflected form of the verb, they form a complex head, derived by overt incorporation of the particle into the verb. Let me call this the *Overt Incorporation Approach* (OIA) to particle verbs. In contrast, I will argue that the particle does not incorporate overtly, but only at LF. I call this analysis the *Covert Incorporation Approach* (CIA). (5) shows that the CIA still predicts that particle and verb are adjacent at S-structure, although no overt particle movement has taken place:[3]

(4) OIA: [$_{C'}$ weil [$_{IP}$ Peter [$_{I'}$ [$_{VP}$ die Tür [$_{PP}$ t_i] t_{i+j}][ab$_i$ schließt]$_{i+j}$]]]
(5) CIA: [$_{C'}$ weil [$_{IP}$ Peter [$_{I'}$ [$_{VP}$ die Tür [$_{PP}$ ab] t_i] [schließt]$_i$]]]

Since (5) is the S-structural representation, the phonology still "sees" verb and particle as adjacent. However, in order to get the right semantics for the verb-particle construction, the particle must incorporate at LF to form a complex predicate with the verb (see section 4 below). In the following sections, I will provide arguments against the OIA and in favor of the CIA.[4]

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[3] In (4) and (5) I represent the maximal projection of the particle as a PP. I do not adopt the SC-approach here because the SC-analysis predicts that all particles are one-place predicates - recall that a SC is a "small clause". This, however, is not the case. For example, particles can also function as aspectual operators or saturate a predicative argument position of the verb (see Stiebels 1996 and section 4).

2.1. Verb Second

The first argument against overt movement of the particle comes from V2. Here the verb and the particle are clearly separated in overt syntax, a non-trivial problem for the OIA. There are two possible ways for the OIA to deal with V2. First, overt incorporation could be taken to be optional, simply not applying if the verb moves to Comp°. However, this view requires that the particle somehow has to "know" where the verb will end up in the derivation before it "decides" whether to incorporate or not. Furthermore, it is reasonable to assume that the particle and the verb have to combine at some stage in order to allow late lexical insertion. Hence the optionality view requires both abstract and overt incorporation (the former in V2; the latter in all other cases). It is clear that the CIA, which assumes abstract incorporation of the particle for all cases, is conceptually simpler. Furthermore, it is in accordance with Chomsky's (1995) Minimalist Program, where optional movement is excluded on general grounds.

Alternatively, proponents of the OIA could argue that the particle always incorporates overtly, but that V2 triggers *excorporation* of the verbal head. Excorporation, however, is explicitly ruled out in Baker (1988) in order to exclude traces in words. Indeed, if the trigger for particle incorporation is word-formation, excorporation out of the derived particle verb violates Lexical Integrity. Furthermore, there is a technical problem with excorporation. It seems to be a reasonable assumption for the OIA that after overt incorporation of the particle, the whole complex $[P°+V°]_{V°}$ moves and adjoins to Infl° (cf. (4)):

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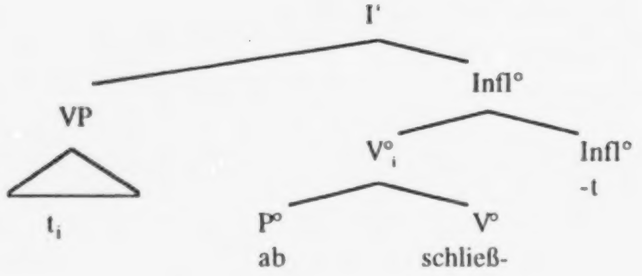
[4] Both Kayne (1985) and Den Dikken (1995) also reject overt particle movement in their (competing) analyses of verb-particle constructions in English. In a footnote, Kayne points out that it might be possible to account for the properties of particle verbs in Dutch without a rule of overt particle incorporation. But he does not further pursue this idea.

(6)



(6) shows that there is no segment of the complex Infl°-head that includes the inflected verb but excludes the particle; the finite verb cannot move to Comp° without the particle. This means that (6) cannot be an intermediate step towards V2. But there is no straightforward way to derive a complex Infl-head that allows further verb movement and stranding of the particle in Infl°. This is another problematic aspect of the OIA.

The most serious problem for the OIA, however, is that it fails to explain *why* the particle does not move with the verb in V2 if incorporation can take place overtly. One might stipulate that prepositional elements in general are not allowed in Comp°. This stipulation, however, is empirically wrong, as shown in (7)(c) and (8)(c):

(7)(a) *weil Peter sein Auto durch den Wald fährt*
because P. his car through the forest drives
(b) *weil Peter den Wald (mit seinem Auto) durchfährt*
because P. the forest (with his car) through-drives
(c) *Peter durchfährt den Wald (mit seinem Auto)*
Peter through-drives the forest (with his car)
(8)(a) *weil Peter den Hubschrauber über die Stadt fliegt*
because P. the helicopter over the city flies
(b) *weil Peter die Stadt (mit dem H.)) überfliegt*
because P. the city (with the h.) over-flies
(c) *Peter überfliegt die Stadt (mit dem Hubschrauber)*
Peter over-flies the city (with the helicopter)

(7) and (8) show instances of the applicative construction in German. The heads of the directional PPs in the (a)-examples can incorporate into the verb, turning their complements into the direct ob-

jects (the former direct objects can be realized as oblique phrases). Crucially, in verb second, the whole derived complex verb moves to Comp° ((7)(c) and (8)(c)); stranding of the incorporated preposition is impossible. This shows that there is no ban on $[P^\circ+V^\circ]_{V^\circ}$ in Comp°. However, if the possibility of overt incorporation exists in principle, it is then hard to see why particles are not allowed to move with the verb.

None of these cases poses a problem for the CIA. Since the verb and the particle are generated in different syntactic positions, the default assumption is that syntactic rules that trigger verb movement apply as usual and only affect the verb. Movement of the particle is not required before LF.[5] Provided that, following Chomsky (1995), LF operations are "less costly" than overt movement, overt raising of the particle is barred by economy principles (Procrastinate) because it is never forced for convergence.[6]

2.2. *zu*-Infinitives

The infinitival marker *zu* is located in Infl° (cf. Grewendorf and Sabel 1994; Sabel 1996) and always precedes the verb. Therefore, the verb right-adjoins to Infl° in infinitives, and consequently, *zu* also precedes prepositions that are incorporated into the verb (cf. (7) and (8) above):

(9)(a) *zu durchfahren* (b) *zu überfliegen*
to through-drive to over-fly

However, *zu* always intervenes between the particle and the verb:

(10)(a) *abzuschließen* (b) *auszutrinken*
Prt-to-lock Prt-to-drink

---

[5] I assume that at LF, moved verbs have to be reconstructed into their base positions to make semantic computation possible (cf. von Stechow 1996). This reconstruction precedes incorporation of the particle.

[6] Note, however, that my account differs from that of the Minimalist Program in that LF movement is not motivated by (weak) feature checking but by the lexical semantics of the particle verb.

According to the OIA, the infinitives in (10) form complex heads. However, if the particle incorporates into V°, how does *zu* end up between the verb and the particle? The OIA predicts the wrong order *zu*-P°-V°, i.e. the one that is found with the "real" incorporated prepositions in (9). The CIA, in contrast, makes the right prediction: Since the particle stays *in situ* in overt syntax, it precedes the infinitival marker and the verb:

(11) $[_{CP}$ $[_{IP}$ PRO $[_{I'}$ $[_{VP}$ die Tür $[_{PP}$ ab] t_i] $_{I°}$[zu [schließen]$_i$]]]]

2.3. Intonation

A final argument comes from the stress pattern of particle verbs as oppossed to that of complex verbs derived by incorporation. As indicated by the sign ('), complex verbs like those in (7) and (8) always have stress on the base verb:

(12)(a) durch'fahren (b) über'fliegen

In contrast, particle verbs have the main stress on the particle:

(13)(a) 'abschließen (b) 'austrinken

If the particle verbs in (13) and the words in (12) were both complex heads, as the OIA predicts, the phonological difference would be surprising. The CIA, however, predicts the intonation pattern of particle verbs. Since the particle remains inside the PP-complement at S-structure, it behaves exactly like other complements with respect to intonation:

(14)(a) nach 'Hause gehen (stress inside PP)
"go home"
(b) 'traurig sein (stress inside AP)
"be sad"
(c) ein 'Buch lesen (stress inside DP)
"read a book"

To summarize, the OIA fails to explain the properties of particle verbs, whereas the CIA accounts for the facts in a straightforward way. I therefore conclude that the OIA has to be rejected.

3. Apparent problems for the CIA

3.1. Extraposition and adjacency

In this section I want to discuss evidence in favor of the OIA. Let me first turn to the strong adjacency requirement found with particle verbs. According to the CIA, there is always at least one maximal projection (namely, VP) that intervenes between verb and particle. The structure in (5) above hence predicts that extraposed phrases that right-adjoin to VP can appear between a particle and the verb. However, (15)(c) shows that this seems impossible:

(15)(a) *daß Peter das Heu mit der Heugabel ablädt*
that Peter the hay with the fork Prt-loads
(b) *daß Peter das Heu* t_i *ablädt* [*mit der Heugabel*]$_i$
that Peter the hay Prt-loads with the fork
(c) **daß Peter das Heu* t_i *ab* [*mit der Heugabel*]$_i$ *lädt*
that Peter the hay Prt with the fork loads

But does (15)(c) really show that the particle has incorporated into the verb? The answer is no. As shown in (16) and (17), extraposed constituents cannot intervene between non-minimal secondary predicates and the verb, either:

(16)(a) *daß Peter das Bild in seinem Zimmer zu Ende malte*
that Peter the picture in his room to end painted
"that Peter finished the painting in his room"
(b) *daß P. das Bild* t_i *zu Ende malte*[*in seinem Zimmer*]$_i$
that P. the picture to end painted in his room
(c) **daß P. das Bild* t_i *zu Ende* [*in seinem Zimmer*]$_i$ *malte*
that P. the picture to end in his room painted
(17)(a) *daß Peter mit seinem Hund nach Hause ging*
that Peter with his dog to home went
"that Peter went home with his dog"

(b) *daß Peter* t_i *nach Hause ging* [*mit seinem Hund*]$_i$
that Peter to home went with his dog
(c) **daß Peter* t_i *nach Hause* [*mit seinem Hund*]$_i$ *ging*
that Peter to home with his dog went

The data in (16)(c) and (17)(c) cannot be explained by assuming incorporation, since the resultative PP in (16) and the directional PP in (17) cannot undergo head movement. It seems reasonable to look for an account that explains both (15)(c) on the one hand and (16)(c) and (17)(c) on the other.

The account I want to suggest is based on a proposal made by Truckenbrodt (1995) who argues that extraposition is phonologically constrained. I assume that phonological phrases cannot be separated by extraposed material. Since in the (a)-examples of (15)-(17) the verb and the secondary predicate (regardless of its minimal or non-minimal status) always form a phonological phrase, extraposition must move the PPs in (15)-(17) to the right boundary of this phrase. Hence, the PPs must right adjoin to IP, as in the grammatical (b)-examples, and the (c)-examples are ruled out.

However, if the extraposed PP itself does not form a phonological phrase, it is possible to integrate it into the prosodic category formed by the verb and the secondary predicate:

(18)(a) ?*daß Peter sich da*$_i$ *ganz gut aus* [t_i *mit*] *kannte*
that Peter himself there quite good Prt with knew
"that Peter was quite knowledgeable about it"
(b) ?*weil Peter da*$_i$ *schließlich wieder ab* [t_i *von*] *kam*
because P. there finally again Prt from came
"because Peter finally gave it up"
(c) ??*als Peter* t_i *an* [*zu weinen*]$_i$ *fing*
when Peter Prt to cry caught (lit.)
"when Peter started to cry"

In (18)(a) and (b), the pronominal complement of the postposition has been scrambled. The extraposed PP now only includes its head and therefore can intervene between the particle and the verb. In (18)(c), even an extraposed clause can appear between verb and particle. Although slightly marginal, sentences like those in (18) occur frequently in spoken German and show that the particle and the verb do not form a complex head in overt syntax, contrary to what the OIA suggests. Instead, they behave exactly like other predicative complements of the verb. Since the OIA can neither account for (16)(c) and (17)(c) nor for the data in (18), the apparent argument in favor of the OIA turns out to be another argument against it.

3.2. Verb Raising in Dutch

The strongest support for the OIA comes from Verb Raising (VR) in Dutch. VR is the process of raising the embedded infinitive and move it to the right of a VR-triggering matrix verb (cf. Evers 1975; van Riemsdijk 1978). (19) shows the possibilities with an embedded particle verb:

(19)(a) *dat ik Jan op* t_i *wil bellen*$_i$
that I Jan Prt want call
(b) *dat ik Jan* t_i *wil opbellen*$_i$
that I Jan want Prt-call; "that I want to call Jan up"

In (19)(a), the matrix verb *willen* has triggered movement of the base verb, stranding the particle. This is expected under the CIA. What is not expected, however, is movement of the complex particle verb *as one word* in (19)(b). If (19)(b) is really a case of head movement, then it provides an argument against the CIA.

One could argue that (19)(b) might be derived by Scrambling of the embedded object *Jan* and extraposition of the VP including the particle verb (the "Third Construction", cf. den Besten and Rutten 1989, or "Remnant Extraposition", cf. Broekhuis et al. 1995). However, such a strategy is clearly not available. Modals do not allow extraposition, as shown in (20):

(20) **dat hij wilde een huis kopen*
that he wants a house buy

Moreover, if the matrix verb appears in a perfect tense, the participle must be replaced by the infinitival form of the matrix verb in verb clusters. This so-called *Infinitivus Pro Participio* (IPP)-effect is obligatory with modals (cf. den Besten and Rutten 1989):

(21) *dat hij een huis heeft *gewild / willen kopen*
that he a house has *wanted-pp/want-IPP buy

We have to conclude that the complex *wil opbellen* in (19)(b) really must be a complex head. But does this necessarily mean that overt particle incorporation has taken place?

As an alternative, I suggest that the verb complex in (19)(b) is not the result of verb movement in the syntax, but has been derived in the lexicon.[7] In Bierwisch (1990) it has been suggested that modal verbs can function as pseudo-affixes that combine with verbs in the lexicon. The result is a single, but internally complex, verb. According to this approach, the derivation of a verb cluster like the one in (19)(b) proceeds as follows: The particle verb is generated in the lexicon by compositionally combining the semantics of the verb and the particle.[8] The affixal character of the modal is represented by a predicative argument position that is associated with the lexical category feature [+V]. The modal may now combine with the derived particle verb by Function Composition, and the complex verb inherits the argument structure of the particle verb.

Although the possibility to derive verb clusters in the lexicon solves the VR-problem for the CIA, one may object that I have now made two incompatible claims about the derivation of particle verbs. On the one hand, I have suggested that *opbellen* in (19)(b) has been derived in the lexicon. On the other hand, I have argued throughout this paper that the particle and the verb are two separated heads and do not form a complex head in overt syntax. In the following section I will show that these two claims are only apparently contradictory.

---

[7] Bennis (1992) shows that in verb clusters that consist of more than two verbs, the possible distribution of a particle cannot be derived by strict cyclic particle incorporation. This is another argument against the OIA. However, since I do not see how the alternative lexical approach suggested here could account for Bennis' observation, I leave this point open.

[8] See Stiebels (1996) for a detailed analysis of the semantics of German verb-particle constructions. Dutch particle verbs may be analyzed along the same lines.

4. Particle verbs as lexical objects

Although I have argued above that particle verbs do not enter the derivation as V°-heads, there is also strong evidence that they are lexical objects, i.e. that the complex $[\text{Prt+V}]_V$ must exist as a lexically derived entity. Note first that the particle and the verb do not combine in a semantically uniform way, as one might expect if the semantics was guided by the syntax. (22) illustrates that particles in German can fulfill all kinds of semantic functions:

(22)(a) particle introduces one argument:
das Mädchen anlachen
the girl Prt-laugh; "smile at the girl"
(b) particle saturates argument position:
den Griff ankleben (cf.: *den Griff an die Tür kleben*)
the knob Prt-glue, the knob at the door glue
(c) particle introduces two arguments:
sich einen Bauch anessen
oneself a belly Prt-eat; "eat until one has a belly"
(d) particle as an aspectual operator:
den Artikel anlesen
the article Prt-read; "read the article partly"

A stronger argument for the lexical status of particle verbs comes from the observation that particle verbs in German can undergo derivational morphology (cf. Neeleman 1994 for Dutch):[9]

(23) (a) *einführen* - *die Einführung*
introduce the introduction
(b) *ausleihen* - *die Ausleihe*
lend out the loan
(24) (a) *abschließen* - *unabgeschlossen*
lock unlocked

---

[9] Although some deverbal nouns and adjectives may be derived syntactically, this is definitely not true for all deverbal nominal and adjectival forms. For example, Kratzer (1994) shows that the prefix *un-* never attaches to phrasal adjectival participles. Hence the underlying form *abgeschlossen* modified in (30)(a) must be lexically derived.

(b)	*anfechten*	-	*anfechtbar*
	dispute		disputable

I draw the following conclusion: particle and verb are in fact combined in the lexicon to form a complex verbal compound $[\text{Prt+V}]_V$. This lexical object can form the basis for further derivational processes occuring in the lexicon: Noun formation as in (23), adjective formation as in (24), or verb cluster formation, as shown in section 3 (the lexical derivation of complex verbs including particle verbs is therefore no exceptional process).

However, if the particle verb does not undergo further morphological operations, the complex verb is prevented from being inserted as a complex V°.[10] Instead, the particle and the verb have to be inserted as independent heads. Economy conditions prevent the particle from combining with the verb overtly, as argued in section 2. At LF, however, incorporation is forced by semantic conditions: The meaning of the particle verb must somehow be "inserted" before the structure is semantically interpreted. But this insertion is only possible if the verb and the particle form a complex head at some stage of syntax; the lexical entry $[\text{Prt+V}]_V$ can only be "superimposed" on a syntactically derived head structure $[P^\circ+V^\circ]_{V^\circ}$.

This is essentially the core idea behind Borer's (1988; 1991) system of Parallel Morphology. Borer argues that the output of morphological operations can be inserted at every stage of the derivation as long as the syntax creates the right environment for this insertion. For example, incorporation of an adjective like *wide* into a verbal head yields a structure that allows the insertion of the morphological word *widen* derived in the word formation component of grammar. My analysis of particle verbs requires the extension of Borer's system in three respects: First, late insertion is not only possible at S-structure, but also at LF. Second, this insertion affects only the semantic part of the entry of a derived particle verb (its phonological information, of course, is not accessible at this level). Third, the semantics of the particle verb is "lexical" in the sense that the combination of both elements may require compositional devices only available in the lexicon.

---

[10] I think that the answer to the question *why* there is a ban on this kind of particle verb insertion is an essential step towards a full acount of particle verbs. At this point, I can only speculate on the solution. I suppose that considerations about the syntactic representation of argument structural and aspectual properties of lexical elements provide the key to an answer (see Groos 1989 for some discussion).

In my analysis, abstract incorporation is motivated by the mismatch between the morphosyntactic and the semantic properties of particle verbs. In this respect, head movement at LF has an interesting parallel at the interface between syntax and phonology: In their theory of "Distributed Morphology", Halle and Marantz (1993) postulate an additional level of Morphological Structure (MS) between S-structure and PF. MS is "a syntactic representation that nevertheless serves as part of the phonology" (1993:114). At MS, operations like "merger" and "fusion" manipulate S-structure and create new terminal nodes that are associated with the phonological features of a specific lexical item. Halle and Marantz call this phonological interpretation of terminal nodes "Vocabulary Insertion".

Abstract incorporation may now be looked at as the "semantic" component of Distributed Morphology. At LF, a new complex terminal node is created that allows insertion of the semantics associated with a lexical item. This has an important consequence: Since terminal nodes only receive phonological features at MS, these features are not present during the syntactic derivation. Consequently, if the analysis I suggest here is correct, the semantic information of a lexical item cannot be present in the syntax, either, since it is only added at LF. Hence my account entails the strict separation of the phonological, semantic, and syntactic features of a lexical item. This view has very recently been advocated by Jackendoff (1997). Jackendoff argues that phonology, syntax, and semantics are three independent generative systems of grammar whose derivations are coordinated by correspondence rules. Lexical items, which (mostly) combine information from all three components, are therefore "small-scale" correspondence rules. Although Jackendoff's system differs in important respects from the analysis outlined here (for example, there is no LF and no covert movement in his theory), I suspect that many of the remaining questions can be answered by elaborating the consequences of Jackendoff's approach with respect to verb-particle constructions. I leave this as a goal of future research.

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